The move towards a specific tortious civil liability for intelligent robots

التوجه نحو مسؤولية مدنية تقصيرية خاصة بالروبوتات الذكية

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abstract:

Owing to the distinctive capabilities of intelligent robots, supported by artificial intelligence, which enable them to engage in self-learning and perform tasks and functions autonomously without human intervention, damages may arise affecting third parties. This, in turn, places the legal framework of civil liability before a complex challenge with regard to ensuring compensation for victims of such acts committed by robots.

As a solution, the European Union introduced specific regulations governing robots on 16 February 2017, under which the European legislator adopted the principle of the "human proxy." This principle assigns legal liability to such a proxy, whether the manufacturer, owner, or user for damages arising from the actions of robots. The primary aim of this study is to examine and analyze the legal framework of this principle as established by the European legislator, with a view to clarifying the mechanism.

Keywords: Artificial Intelligence, Robot, Civil Liability, Human Proxy.

الملخص

بفضل ما تتميز به الروبوتات الذكية من قدرات مدعومة بالذكاء الاصطناعي، والتي تمكّنها من التعلم الذاتي وأداء المهام والأعمال بشكل تلقائي دون تدخل بشري، قد تنشأ أضرار تصيب الغير، الأمر الذي يضع الإطار القانوني للمسؤولية المدنية أمام إشكالية معقدة فيما يتعلق بضمان تعويض المتضررين عن أفعال هذه الروبوتات.

كحل لذلك وضع الاتحاد الأوروبي قواعد خاصة بتنظيم الروبوتات في 16 فيفري 2017، بموجبها اعتمد المشرع الأوروبي مبدأ "النائب الإنساني "الذي يُحمِّل هذا النائب – سواء كان صانعًا أو مالكًا أو مستخدمًا – المسؤولية القانونية عن الأضرار الناجمة عن أفعال الروبوت. وتهدف هذه الدراسة بالأساس إلى بحث وتحليل الإطار القانوني لهذا المبدأ كما أقره المشرع الأوروبي، بغرض بيان آلية تعويض المتضررين من الأضرار التي تتسبب فيها الروبوتات.

الكلمات المفتاحية: الذكاء الاصطناعي، الروبوت، المسؤولية المدنية، النائب الإنساني.

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Introduction:

The robot is considered one of the most prominent applications of artificial intelligence technologies, as it represents an intelligent mechanism equipped with capabilities similar to those of humans. It has been developed to possess a degree of autonomy and independence from human intervention, enabling it to interact with its external environment automatically, in accordance with prevailing circumstances and conditions.

The robotics industry effectively emerged in 1928 in Japan. With the continuous development in this field and the integration of artificial intelligence technologies, the first intelligent robot in the practical sphere, known as "Sophia," was created, which was later granted Saudi citizenship.[1]

Robots are evolving and their use is increasing to the extent that they have become an integral part of modern life,[2] which necessitates ensuring their safety in interactions with humans. Despite their role in serving humankind, they may cause harm, thereby raising the issue of liability for their actions and introducing new legal challenges.

Due to the advanced capabilities characterizing robots, the legal framework of civil liability has faced a genuine challenge with regard to compensating victims for damages caused by intelligent robots, which acquire their expertise autonomously through continuous learning from their experiences and interact with their environment in an innovative manner that is difficult to predict. In search of solutions to this issue, the Committee on Legal Affairs of the European Union established in 2015 a dedicated working group

to study the challenges arising from the use of robots and artificial intelligence technologies in Europe. Upon completion of its mandate, the group submitted a final report containing a set of recommendations to the Legal Affairs Committee, which subsequently, on 16 February 2017, adopted rules of civil law concerning robots, including the recognition of the "Human Proxy" theory.

The primary aim of this study is to examine the distinctive legal framework established by the European legislator as a first step by the European Union towards adopting the theory of the "Human proxy".

What, then, is the basis of this theory, and to what extent is it sufficient to encompass the damages resulting from the acts of robots?

In addressing this issue, the descriptive method will be adopted to define certain terms, in addition to the analytical method for analyzing the legal texts relevant to the study.

The subject will be examined through two sections:

Section I: The concept of the human proxy responsible for artificial intelligence technologies.

Section II: The Incurrence of the liability of the human proxy for the robot.

Section I. The concept of the human proxy responsible for artificial intelligence technologies

Smart robots differ according to the capacities they possess; however, the higher degree of autonomy they enjoy prevents them from being treated as mere tools or objects subject to the custody of other parties such as the manufacturer, the operator, the owner, or the user. This has rendered the traditional rules of tort liability insufficient to address the damages that may arise from the actions of such robots.

Considering that robots, particularly those equipped with artificial intelligence or endowed with features simulating the human mind, can no longer be treated as mere objects or inanimate things, the European Union was prompted to establish a specific legal framework for them, which was introduced on 16 February 2017.

In this context, the European legislator has adopted the theory of the "human proxy", which imposes personal liability on the latter for damages caused by the acts of the robot, whether as its manufacturer, owner, or user, to the extent of their contribution to the occurrence of the harm.

Accordingly, the discussion will first address the definition of both the robot and the human representative responsible for it, and subsequently examine the legal basis of the theory of the human representative, given its novelty.

1. The definition of the robot and the human proxy responsible for it

In light of the developments witnessed in robotics through artificial intelligence technologies, robots can no longer be regarded as mere ordinary objects, particularly when they engage in movement and perform the tasks for which they have been programmed.

Given the absence of a defined legal status for robots and the fact that they have not been granted legal personality, the European legislator has adopted the theory of the "Human Proxy," which assigns to the latter the liability to compensate for damages that robots may cause to third parties.

This section will provide a definition of both the robot and the human proxy who assumes responsibility on its behalf.

A. Definition of the Robot

Robots were originally invented for an essentially industrial purpose, as they were designed to support human labor in the industrial sector. The first robot was practically employed by the company General Motors in the United States of America.[3]

The International Federation of Robotics (IFR), in Article 3, paragraph 6, has defined the intelligent robot as: "An automatically controlled, reprogrammable device, operating on one or more axes, endowed with a degree of autonomy and capable of moving within its environment to perform the specified functions."

With regard to jurisprudence, some scholars have defined the robot as: "An automated device qualified to perform predetermined tasks, whether

through direct human intervention and control, or indirectly by means of programmed instructions within computer systems."[4]

Others, however, have defined it as: "A self-programmed automated device designed to perform specific tasks, whereby the science of robotics is concerned with the use of artificial intelligence technologies, computer sciences, and mechanical engineering for the purpose of inventing and designing programmable machines to carry out certain functions."[5]

B. Definition of the Human Proxy Responsible for the Robot

Article AD of the European Civil Code expressly provides for the liability of the human being as a representative of the robot, stipulating that the human representative shall bear the consequences of damages arising from the acts or omissions of the robot, whenever such representative is its manufacturer, owner, operator, or user.

In this context, the notion of representation does not refer to carrying out acts or behaviors on behalf of the robot under law or agreement, but rather to the substitution of the human representative in assuming liability for the damages caused by the robot.

Some jurists have defined the human proxy responsible for the robot as: 'the person who, by operation of law, bears the obligation to compensate for damages resulting from errors in the operation of the robot.[6]

The theory of the human proxy, as set forth in Article AD, comes as a response to technological developments represented by the invention of robots, since the emergence of such modern innovations or legal novelties necessitates the establishment of an innovative legal framework that corresponds to them.

2. The Legal Basis of the Human Substitute Theory

Whenever a new legal theory emerges, efforts are made to establish its foundation within the principles of the general theory of obligations, as set forth in civil law, being the general source from which legal rules are derived.

In order to clarify the legal basis of the theory of the human proxy, it is first necessary to examine the characterization of his liability under traditional

rules, and then to set out its distinctive or novel legal status pursuant to the provisions of European civil law.

A. The Foundation of the Human Proxy Theory in Light of Traditional Rules

A.1- The Theory of the Human Proxy as a Form of Substitution

Some scholars have considered the relationship between the robot and the human representative as one based on the concept of representation. This latter is manifested in Algerian civil law in two forms: legal representation, which is imposed because of lack of legal capacity, as in the case of a minor; and contractual representation, which is embodied in agency, whereby an individual authorizes another to act on his behalf and in the interest of the principal.[7]

If a comparison is drawn between the theory of the human representative and legal representation, it becomes clear that the latter applies to a person lacking legal capacity, such as a minor, who is a natural person legally recognized as having legal status, enjoying rights and bearing obligations depending on the extent of his capacity and awareness.

It should be noted that the European Civil Code did not confer any legal capacity upon the robot. This is evident from its adoption of the term "representative" without resorting to other terms such as "guardian" or "custodian," considering him merely as "acting on behalf of" the robot, without acknowledging an independent legal personality for it. Furthermore, representation in its essence pertains to the performance of legal acts rather than the assumption of liability.

In addition, it is difficult to apply contractual representation, such as agency, in the absence of an agreement between the parties, particularly since the relationship between the human representative and the robot may be limited to that of an owner and his property. Furthermore, the robot does not enjoy any legal status to date, as it has not yet been granted legal personality.

A.2- The theory of the human representative falls within the system of vicarious liability of the principal for the acts of the subordinate.

Liability of the principal for the acts of his subordinate is founded on the basis that a person resorts to another in managing his affairs or carrying out his work under his supervision and direction, as in the case of a factory owner employing workers. Pursuant to Article 136 of the Algerian Civil Code, for such liability to arise, three elements must be present: the existence of a relationship of subordination between the subordinate and the principal, the commission of an act by the subordinate connected with his duties or functions, and that such act results in damage being caused to a third party.

It should be noted that the theory of the human proxy does not align with the rules governing the liability of an employer for the acts of his subordinate. The latter is based on a relationship of subordination and on objective liability arising from damage, linked to the acts of the subordinate rather than to his person. In contrast, under European civil law, the robot is not placed in the legal position of a subordinate, as it remains a tool serving human purposes and is not subject to equivalent supervision, given that the employer exercises full supervision over the acts of a person with full legal capacity.[8]

Moreover, the right of recourse granted to the employer against his subordinate, pursuant to Article 137 of the Algerian Civil Code, presupposes the existence of the subordinate's patrimony. This requirement is absent in the case of the robot, which has neither legal personality nor an independent legal status.

A.3- The Theory of the Human Proxy as a Form of Substitution

It should be noted that Article 139 of the Algerian Civil Code regulates liability for damage caused by animals; however, this provision does not apply to robots, since artificial intelligence, although it may simulate human behaviors and expressions, does not constitute a living being to be classified within the category of animals.

Article 138 of the Civil Code concerns liability for the custody of things. The essential conditions for its establishment are that a thing must have caused damage to another, and that this thing must be under the custody of a person

who has the authority to use, manage, and supervise it, whether or not he is its owner.

From a legal perspective, if the theory of the human proxy is characterized as a development of the theory of the custodian of things, this would require considering the robot as a "thing." Some have defined a "thing," in light of Article 138 of the Civil Code, as any material, non-living object.[9] The question then arises as to the extent to which artificial intelligence, if deemed a "thing," aligns with Article 138?

Artificial intelligence may indeed be regarded as a "thing" when linked to a tangible material medium, such as a robot, since the legislator did not require inanimate status. However, the issue arises with respect to abstract software not connected to a physical carrier.

The legislator has not provided an exclusive definition of the concept of "thing," nor has it restricted it to a material nature. Consequently, it may refer to tangible objects as well as intangible ones, particularly since legal doctrine has not settled on limiting the notion of a thing solely to its material aspect. Because intelligent systems consist of data or software, they are considered intangible or incorporeal objects, which the Algerian law has classified among digital works protected under the provisions of Ordinance No. 03-05 on Copyright and Related Rights.[10]

Based on the foregoing, the programmer's liability arises when intelligent systems cause harm to others.[11] However, their autonomy and capacity for self-learning make it difficult to control their operation, on the one hand. On the other hand, the theory of the human proxy in European civil law differs from the theory of the custodian of things: the former is grounded in fault and liability established by operation of law, whereas the latter is based on custody and effective control over the thing. This raises a challenge in applying it to intelligent robots, which may act beyond the scope of their programming. Furthermore, the legislator employed the term "proxy," which differs in substance and legal effect from the notion of "custodian of things."

It follows that the traditional legal characterizations of the human proxy's liability for robots do not provide a clear legal basis for holding a

person, in the capacity of proxy, liable for the errors or damages caused by the robot. Consequently, such liability has been classified as a special or novel case.

B.The special legal status of the human proxy theory

The European Civil Code has established a special and innovative regime for intelligent robots, namely the "human proxy," under an independent legislative provision separate from the general rules, such as custody of things or the theory of vicarious liability. Pursuant to Article AD, this regime is based on the presumption of a legal proxy for liability between the robot (the represented) and the responsible human,[12] with the aim of attributing liability or the consequences of the robot's acts to the latter. This approach seeks to overcome the shortcomings of traditional rules in determining who is liable for operating the robot or for the damages, it causes, particularly in light of the fact that the robot has not been granted legal personality.

The European legislator, within the framework of the theory of the human proxy, adopted an intermediate position,[13] the robot is neither regarded as a "thing" subject to custody under presumed fault, nor granted a virtual electronic legal personality that would entail rights and obligations.

The application of this theory is limited to the operational phase of the robot, when it enjoys autonomy in thought and execution. In such case, the liability of the human proxy is based on proof of fault in manufacturing, management, or operation, and not on presumed fault as in the liability of the custodian of a thing. Conversely, when the robot is inactive and devoid of autonomous activity, it is treated as a thing rather than as an intelligent machine.

Section II: The Incurrence of the liability of the human proxy for the robot.

The European legislator has granted robots a special legal status, without, however, going so far as to recognize them as having legal personality, which may nevertheless be a prelude to such recognition in the future. Robots are no longer treated merely as objects subject to custody, nor as minors under supervision, but rather as intelligent machines endowed with a degree of autonomy in thought and movement, resembling, in a certain respect, an adult

person whose actions are not subject to the control of others. For this reason, the European Civil Code has subjected them to the rules of the "human proxy" theory as the most appropriate legal framework.

The application of this theory, with regard to liability for the acts or omissions of robots during their operational phase, when they enjoy autonomy of movement and reasoning, requires the identification of the categories qualifying as human proxies, and the determination of the constituent elements of such liability for damages caused by robots.

1. Identification of the human proxy responsible for the robot

The forms of the human proxy responsible for the acts of the robot vary according to the circumstances of the incident giving rise to the damage and the extent of the proxy's actual authority in supervising and controlling it, such that the establishment of liability depends on whether fault on his part is proven or absent.

The European Civil Code provides examples of the human proxy who bears liability for breaches arising from the operation of the robot, which can be limited to two main forms:

A. the human proxy in the event of manufacturing

The manufacturing stage represents the phase in which the robot is created as an intelligent machine, through the establishment of its mechanical structure and the programming of its artificial intelligence-based systems.

The manufacturer or the owner of the manufacturing facility is deemed the human proxy responsible for the robot during this stage, and his legal liability arises in two specific cases.

A.1 Liability for Errors in Robot Manufacturing

The manufacturer of the robot is held liable for damages arising from non-compliance with manufacturing standards and rules, namely when the robot contains structural or technical defects attributable to a manufacturing fault, resulting in its deviation from the functions assigned to it and its performance of acts inconsistent with normal use.

In this case, the European Civil Law has permitted the application of the liability regime for defective products.[14]

Examples of this include the manufacturer's negligence in carrying out periodic maintenance of a robot used in drilling operations, which resulted in injuries to passers-by; likewise, the case of a defect in a robot designed for medical care that causes the patient to be moved improperly, thereby leading to the deterioration of his health condition.

A.2 Legal liability for errors committed by the robot during the manufacturing process

Since robots require precise mechanical operational tests during the stage of manufacturing and programming, the manufacturer is deemed a human representative who bears legal liability for any damage caused to the workers conducting such tests because of any deviation or malfunction occurring on the part of the robot.

B. the human proxy in the event of manufacturing

The operational phase of the robot involves a range of multiple and complex possibilities that cannot be precisely defined. The European Civil Code relating to robots has stipulated categories of human deputies during this phase by way of example, not limitation, namely:

B.1 Operator

He is deemed a human proxy during the operational phase of the robot any person who undertakes placing it into actual working condition, whether as its owner, lessee, or manufacturer during the trial operation stage.

This is evidenced, for example, by errors that may arise from the robot in the banking sector, such as managing clients' accounts, executing payments or financial transfers incorrectly, or disclosing to a client information pertaining to another client.[15]

B.2 Owner

He is the individual who personally operates the robot to serve his own interests or those of his clients. An example of this is the owner of a private hospital who possesses medical robots for performing surgical operations, where such an owner bears liability if the robot commits an error that endangers the patient's safety.

It is noteworthy that European legislation has placed the owner in the position of a human proxy after the manufacturer and the operator,[16] thereby departing from what is established under the theory of custody of things.

Some hold the view that it is necessary to establish limited liability for the owner of the operated robot, whereby his liability would be confined to the value of the robot itself, without encroaching upon his overall financial assets. The purpose of this is to restrict the liability arising from the operation of the robot to its value alone, without extending it to the owner is other property.

B.3 The user

In this case, the human proxy is the subordinate who undertakes the tasks of supervision and guidance during the stage of operating the robot, whether as an employee of the manufacturer during the trial operation, or as an employee of the operator leasing the robot, or as a servant subordinate to the owner. It is required that this person be solely entrusted with the task of operating the robot and directing its functions at the time of the incident, in which case he shall be held liable for the acts performed by the robot that resulted in causing harm to others.[17]

In this context, the European legislator has adopted the principle of user liability, thereby departing from the theory of the custodian of things, which establishes the liability of the owner as the natural custodian of the thing under the general rules.

Each of the aforementioned persons is considered a human proxy insofar as his fault in supervision or direction constitutes the direct cause of an accident resulting in harm to others, without any presumption being established against the owner within the framework of human representation.

2. Elements of the Liability of the Human Substitute

The establishment of the liability of the human substitute under the European Civil Law for damages that may be caused by the robot, in its broad sense such as autonomous vehicles, requires the fulfillment of the elements of civil liability, namely proof of fault, the occurrence of damage, and the existence of a causal link between them.

It should be noted that the special regime governing the liability of robots requires that the latter be in an operating state and relying on their autonomous capabilities derived from artificial intelligence technologies. Conversely, if the robot is in a state of shutdown or inactivity, it is legally treated as a thing subject to the rules of custody.

A. Fault

Fault is considered an essential element for the establishment of tortious liability in general, and this equally extends to the liability of the human proxy. In this context, fault refers to the breach of operational duties resulting in damage to third parties due to the acts committed by the robot, or to the negligence of the proxy in fulfilling the duty of supervision and control to prevent the occurrence of harm.

As a rule, the burden of proving fault lies with the injured party, particularly since the European legislator has not expressly adopted the system of presumed fault, although Article AD has indicated the possibility of establishing the liability of the human proxy based on a presumption of fault.[18]

According to the provisions of European civil law, the injured party is required to prove fault, as it is not presumed, as previously indicated. In order to be exonerated from liability, the operator of the robot must establish the absence of fault, of either fault, either by demonstrating that he exercised the ordinary duty of care or that the damage was caused by an external factor, such as force majeure, the fault of the injured party himself, or the fault of a third party.

For example, in the case of a self, driving car employing robotic technology, the company held responsible for the fault of the robot that caused the death of a pedestrian may be released from liability if it succeeds in proving the existence of an external cause, such as force majeure namely, a sudden interruption of the robot's connection to satellites during the trip, which resulted in the loss of the car's navigation map and consequently led to the pedestrian's accident.[19]

Pursuant to the provisions of the European Civil Code, the liability of the human proxy is established whenever he fails to take the necessary preventive

measures that could have reduced risks or mitigated the adverse consequences arising from the operation of the robot, which is referred to as a "breach of the duty of risk management.

It should be noted that the 1985 European Directive on liability for defective products, i.e., the manufacturer's strict liability, governs liability based on defects inherent in the robot. This was reaffirmed by the 2017 European Civil Code on Robotics, which did not require proof of fault on the part of the manufacturer; rather, it suffices for the injured party to establish the existence of a defect in the robot, the damage suffered, and the causal link between them.

B. Damage

Damage is any harm that affects an individual's material or moral interest.[20] It may take the form of bodily injury, such as when a self-driving car causes the death of a person in a traffic accident, in which case moral damage arises as a consequential harm. Material damage may also affect the victim's financial estate, causing a loss, for instance, when a drone destroys a house upon collision, or when a banking robot hacks into a client's account and transfers the funds to another party. Damage may likewise result from the loss of a chance of gain, such as the loss of income following a permanent injury that has led to incapacity, among other cases.

The European legislator has emphasized that damage must be actual,[21] meaning that it must have occurred at the time of claiming liability against the human representative, irrespective of its type, whether material or moral, while excluding potential or future damages.

C. Causal Link

According to the European Civil Law on robots, the injured party bears the burden of proving the causal link between the act of the robot and the damage suffered by others, as such a relationship is not presumed.

For example, if a medical robot performs a heart surgery on a patient whose health subsequently deteriorates, the patient must prove that the deterioration resulted from the operation, meaning that there is a connection between the surgical intervention and the aggravation of his health condition.

The hospital, however, may exonerate itself from liability by proving other causes, such as the patient's failure to follow medical instructions or the existence of pre-existing illnesses.

The European legislator has adopted the "risk management" approach, which places liability on the human deputy for taking the necessary preventive measures to avoid or mitigate potential risks arising from the robot. Accordingly, his liability may be established through the existence of a causal link between the omission of such measures and the occurrence of damage, such as the failure to install cameras at the sites of robot operation or the absence of direct supervision.

In this context, the European Parliament has proposed making insurance mandatory for intelligent machines, in order to ensure that the insurance company regardless of the cause or nature of liability pays compensation.

Conclusion:

Key findings of this study:

- Most studies have shown that the traditional rules of civil liability are insufficient or inadequate to address damages arising from the actions of robots. This has led the European legislator, on 16 February 2017, to enact specific legislation on robots, under which a new theory, known as the "Human Proxy Theory", was introduced as a legal basis for holding the proxy civilly liable for damages caused by robots, while also allowing reference to the provisions of defective products liability.

- Under its specific legal framework, the robot has shifted from being regarded merely as a thing subject to guardianship to being treated as an entity that can assume human-like responsibility under the law, without the need to presume fault.

- Based on the "Human Proxy" theory, the European legislator has imposed legal liability on a group of individuals for operating the robot, according to the degree of their breach during its manufacturing or utilization, and considering their failure to take the necessary measures to prevent potential

acts by the robot. This approach is referred to as the "risk management" method, representing a novel trend in the field of liability proof.

As for the main recommendations:

- It would be preferable that the liability of the human proxy, whether an owner, manufacturer, operator, or user, be based on a presumption of fault, in order to prevent evasion of liability and to ease the burden of proof, particularly in light of the rapid pace of development in the field of intelligent robots.

- A special insurance system for robots may be established with the aim of guaranteeing compensation for damages that may be caused to third parties because of their activity, or alternatively, dedicated compensation funds may be created for this purpose.

- A mechanism similar to the concept of a "black box" may be established to enable the tracing, analysis, and monitoring of harmful acts committed by artificial intelligence, thereby facilitating the identification of the source of the malfunction and clarifying the causes of the resulting damage.

- The European Union is seeking to recognize the legal personality of robots, which would allow the direct attribution of civil liability to them based on their autonomous nature. This, however, could lead to exempting another person from the consequences of their acts, a matter that remains contingent upon risks and challenges requiring thorough study before being determined.

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