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Article

ADJUDICATING CASES OF NEGLIGENCE IN ARTIFICIAL INTELLIGENCE

Jayashree S Shet[1]

Abstract : *The modern technological world is working towards exploring new dimensions in the field of Artificial Intelligence (AI). It is a well-known fact that AI is developing at a fast pace and in all likelihood, it will take over mankind in various sectors of the society. Such developments must be deliberated upon and requires the modification of the existing legislative framework in India. The main aim of this article is to address the uncertainty with respect to the personhood of AI and to assess the intelligence of such a non-human entity. Although such inventions carry their own set of menaces, it is imperative that such developments should continue as it contributes to the progress of the country. A serious challenge with respect to the imposition of liability on AI has to be looked into, in the cases of negligence. This article deals with two ways in which such liability can be attributed. Firstly, by ascribing legal personality and making them accountable for their own acts. Secondly, by transferring it to their users or manufacturers. In the course of this article we will examine whether such AI systems will be capable of satisfying the essential requirements of personhood, i.e., possessing rights and duties. This raises the issue of the standard of care that shall be attributed to them in cases of negligence. Such standard of care shall be determined based on the degree of risk to which others are exposed and the aim to be attained by such a perilous activity. This article dwells into the comprehensive theory of criminal law with respect to negligence and involves, in addition to the AI, the liability of the programmer, user, and other entities and further deliberates upon the punishments which can be attributed to them. Hence, it is important to ensure that such AI technology functions within the boundaries of law.*

Keywords : *Artificial Intelligence, Criminal Liability, Negligence, Personhood.*

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I. INTRODUCTION

The role of technology is one of utmost importance and has been continuously evolving to make the life of humans easier. The world is currently experiencing the Fourth Revolution, which is based on Artificial Intelligence. Artificial Intelligence (AI) was developed during the late 1950s as a part of the other research on expert systems. This research was based on the belief that if humans can solve commonsense problems, so can machines. It seeks to replace human abilities with artificial intelligence technology. The increasing use of artificial intelligence in various fields can be attributed to its feature of increasing productivity and ensuring the quick and efficient problem-solving ability. The culmination of research in this area was the development of an actual thinking machine known as 'Machina Sapiens' which could act and reason like humans.[2] However, these traits were found to be insufficient to accomplish intelligent thinking. Hence, they added further attributes such as communication, internal knowledge, external knowledge, goal-driven conduct, and creativity.[3]

Many industries have adopted artificial intelligence for their private as well as public uses to advantage the disadvantaged. The medical field has adopted it for medical diagnosis and treatment selection. It helps in providing the best solutions to the diagnosis and also in managing medical records. AI has penetrated into the education sector by helping children learn a wide variety of subjects at any time and has made the problem of grading much more manageable. They have been astute in dealing with finances and have been employed by the banking sector for this purpose. Such involvement can help in curbing fraud. Self-driving cars are one of the

[2] Padhy, N. P. (2005). *Artificial intelligence and intelligent systems*. Oxford University Press.

[3] Hallevy, G. (2015). *Liability for crimes involving artificial intelligence systems*. Springer International Publishing.

other creations of AI. AI helps in understanding the functioning of different markets and helps in devising business strategies.

In the Fakuma World Robot Declaration in 2004, they predicted that these technologies will co-exist with humans and will support them physically and psychologically to promote the existence of a safe and peaceful society.[4] The handiness of robots is indisputable, but the central area of concern is the risks associated with it. The further developed the innovation is, the higher are its odds of disappointment. Failure could be in any context, such as the wrong diagnosis by a medical robot. This raises questions about moral accountability, which is a very complex issue. Can such accountability be expected from machines, or is it only confined to humans is the question that needs to be answered? The purpose of criminal law is to punish those who act against the basic norms of society. It plays a significant role in controlling and maintain peace and order.

II. PERSONHOOD OF ARTIFICIAL INTELLIGENCE

There is a continuous debate about who is to bear the responsibility in case of damages caused by the Possessor of Artificial Intelligence (PAI). On the one hand, we have people arguing about granting such robots personhood in order to make them liable, thus discharging the users and makers from liability, while the others oppose this view. The former group believes that robots should be granted personhood, just like corporations.

In order to attribute personality to such non-humans, they are required to possess certain qualities which belong to humankind. According to Salmond, "*A person is any being whom the law regards as capable of rights and duties. Any being that is so capable is a person, whether a human being or not and no being that is not so capable is a person, even though he be a man. Persons are the substances of which rights and duties are attributes. It is only in this respect that persons possess juridical significance, and this is the particular point of view from which personality receives legal recognition*".[5] As per the general meaning of the word, robots, idols, animals as well as corporations cannot be categorized as 'persons'. On one hand, while law

[4] Weng, Y. H., Chen, C. H., & Sun, C. T. (2009). Toward the human–robot co-existence society: On safety intelligence for next generation robots. *International Journal of Social Robotics*, *1*(4), 268.

[5] Salmond, J. W. (2016). *Salmond on Jurisprudence*. Sweet & Maxwell.

grants specific rights to certain individuals, it imposes duties on others as well. Anyone capable of understanding these rights and duties can be termed as 'person'.

Persons can be classified into two types: natural and legal. Natural persons refer to human beings, while legal persons are those who are treated like humans for the purpose of the law. Legal persons include corporations, institutions as well as estates. It could either be a sole member or a group of persons. It is a legal entity which has a separate existence from that of its owners. Free will is one of the essential elements of personhood[6]. It is required to exercise one's rights. The corporation consists of a group of persons who have particular interests or objectives. The free will of the corporation is thus exercised by these members who are generally known as the Board of Directors. It is based on the principle of 'perpetual succession' which states that "Members may come and members may go, but the company will go on forever". A corporation is not affected by the death of its members. It has a personality which can be differentiated from that of its members. It can own properties in its name and sue as well as be sued. In contrast to its characteristics of a natural person, a corporation can act only through its agents.[7] A corporation can be held liable for the civil and criminal offenses committed by it based on the 'directing mind' theory[8] which states that the physical and mental element of an offense is attributed to the manager of the corporation who is generally the high-ranked executives.

The arguments related to granting personhood to robots revolves around the fact that even dead persons, unborn persons as well as idols are attributed a legal personality. It is believed that personality commences at birth and ceases to exist on death. However, the law recognizes and protects particular interests of the dead when they were alive such as his body, reputation, and his estate.[9] A dead person cannot dispose of his body during his lifetime by a will.[10] Unborn persons, i.e., a child *en ventre sa mere* is allowed to own property before being born even though such interest is a contingent one. The death of a child after being born alive caused due to some negligent injury amounts to murder and is a punishable offense. An idol is a juristic person in

[6] *Id.* at 309.

[7] Mahajan, V. D. (2003). *Jurisprudence and Legal theory*. Eastern Book Company.

[8] Tesco Supermarkets Ltd. v. Nattrass, 1 UKHL AC 153, 33 (1972).

[9] Mahajan, V. D., *Supra* note 6 at 334.

[10] *Id.* at 335.

the sense that is capable of holding property and is liable to pay taxes through its shebaits who are responsible for managing the property.[11] The will of the idol as to its location must also be respected.[12] Such will depends on the will of the worshippers as well as founders. The vital aspect to be noted in all of the above cases is that humans administer these just like a corporation. However, a robot, on the other hand, is an independent body which functions based on the control of data using heuristics.[13]

Robots, on the other hand, can be compared to animals like chimpanzees. Animals are the objects of legal rights but not the subjects. They are not equipped for holding rights and duties and hence are not recognized by any law. Law has to protect the community's interest in the well-being of animals. The formation of a trust in support of specific animals is permitted and enforceable. The question of recognizing the personality of chimpanzees was raised recently in US courts.[14] They filed a writ petition of habeas corpus to release two chimpanzees which were held captive. They argued that such imprisonment against the will of the animals could not be allowed. The respondents highlighted the fact that habeas corpus can be extended only to humans and not animals. The fact that chimpanzees should be granted personhood since they possess many human-like capabilities were not admitted because they are not capable of holding rights and duties and cannot be held accountable.[15] The humans managing and controlling a corporation are the ones that can be held accountable. AI systems, on the other hand, cannot follow the commands of law and hence, they cannot be granted personhood.

III. ARTIFICIAL INTELLIGENCE AND NEGLIGENCE

Modern criminal liability has two major requirements, i.e., one from the law, i.e., *In Rem* and the other from the offender, i.e., *In Personam*. The requirements of the offense (*In Rem*) include legality, which means to determine what is 'right' and 'wrong' as per the requirements of criminal law; conduct, which is the commission of the offense; culpability, which deals with

[11] Yogendra Nath Nasker v. Commissioner of Income Tax, A.I.R 1969 S.C 1089.

[12] Pramatha Nath Mullick v. Pradyumna Kumar Mullick and Anr., A.I.R 1925 PC 139.

[13] Gerstner, M. E. (1993). Liability issues with artificial intelligence software. *Santa Clara L. Rev.*, *33*, 239.

[14] People ex rel Nonhuman Rights Project, Inc. v. Lavery, 124 AD 3d 148 (2014).

[15] Solaiman, S. M. (2017). Legal personality of robots, corporations, idols and chimpanzees: a quest for legitimacy. *Artificial Intelligence and Law*, *25*(2), 155-179.

the responsibility for the fault and personal liability.[16] A person can be punished only if he is personally liable. The offender's requirement (*In Personam*) includes *actus reus* (physical element) and *mens rea* (mental element).

This concept of criminal liability raises several doubts about the '*mens rea*' in the case of a corporation. "*Actus non facit reum, nisi mens sit rea*" is the basic principle of criminal liability. It means that a person can be held liable only when he commits the act with the intent. This question was not answered in India until 2011. Earlier, it was believed that prosecution against a company can be initiated for the offenses which are punishable with imprisonment, but the question of *mens rea* was left unanswered.[17] The 'Doctrine of Attribution' which is followed in the US, was applied to Indian cases as well. It means that the intention is attributed to the 'directing mind and will' of the corporation. This was further clarified in the *Iridium case*[18] that criminal liability would emerge when the offense is related to the business by an individual or group of persons who are responsible for its undertakings and when the level of control is such that it very well may be said to be the 'directing mind and will'.[19]This doctrine is not only applicable to the directors but also for the acts committed by the company through its promoters.

The *'mens rea'* under criminal liability includes general intent, negligence, and strict liability. General intent refers to the highest level of the mental element where the offender is completely informed about the factual circumstances.[20] Negligence is the omission caused due to lack of awareness about the factual element when he should have been aware of it under ordinary circumstances. Strict liability is the lowest level of the mental element.[21]

In the case of *Blyth v. Birmingham Water Works*,[22] negligence was held to be an act of omission resulting in a breach of a duty to do something which a reasonable man would do or doing something which a prudent and reasonable man would not do. During the earlier days, it was

[16] Hallevy, G., *supra* note 2 at 31.

[17] Standard Chartered Bank and Ors. v. Directorate of Enforcement and Ors., AIR 2005 SC 2622.

[18] Iridium Indian Telecom Limited v. Motorola Incorporated and Ors., (2011) 1 SCC 74.

[19] Dinesh B. E., *Doctrine of Attribution in Corporate Criminal Liability*, Lakshmikumaran & Sridharan, available at https://www.lakshmisri.com/NewsandPublications/Publications/Articles/Corporate/Doctrine-of-attribution-in-corporate-criminal-liability (last accessed 15 January 2020)

[20] Hallevy, G., *supra* note 2 at 69.

[21] *Id*. at 68.

[22] Blyth v. Birmingham Waterworks Co., (1856) 11 Ex 781.

misunderstood to be an exception to *mens rea*. However, after further development, it came to be understood as a type of mental element which can be related to factual elements. It consists of three essential elements: duty to take care, breach of the said duty, and consequential damage. Negligence stresses upon the concept of 'awareness'. Any man who is considered to be aware of the ordinary circumstances can be held liable if he commits a negligent act due to unawareness.

A. ESSENTIALS OF NEGLIGENCE

As discussed above, negligence requires the fulfillment of three essential conditions, which are the existence of a duty to take care, breach of such a duty and the resulting damage. The first essential of duty to take care depends on foreseeability and proximity.[23] Foreseeability means that duty of care is owed to those persons who are likely to be injured by omissions, which can be reasonably foreseen. Such care is owed only to those who directly affected due to their presence in the vicinity. "How wide the sphere of the duty of care in negligence is to be laid depends ultimately upon the Court's assessment of the demands of society for protection from the carelessness of others."[24]

The second essential, i.e., breach of duty depends on the standard of care employed by a prudent man. Such breach of duty refers to an act of omission on the part of a reasonable and prudent man, who is capable of ordinarily regulating the conduct of his affairs, would have done or which a reasonable and prudent man would not have done.[25] It requires a specific level of skill and diligence to be employed. Such duty of care depends on the circumstances of the case and may vary from one case to another. A man should undertake the performance of any act, only if he possesses the necessary skills required to do it. The breach of duty to take care does not only extend to the performance of any action but also includes the omission to do something. The damage arising from such a breach of duty is the third essential condition for negligence.

The extent of the duty of care depends on two main factors: the magnitude of risk impacting the public and the significance of the goal to be achieved by the dangerous activity.[26] The higher

[23] Ratanlal & Dhirajlal, The Law of Torts, 461 (Akshay Sapre ed.,27th ed., 2016)

[24] Hedley Byrne & Co. Ltd. v. Heller & Partners Ltd., (1964) AC 465.

[25] Ratanlal & Dhirajlal, *supra* note 22 at 480.

[26] Salmond, J. W., *supra* note 4 at 385.

the risk of carrying out a particular activity, the higher is the amount of care that is to be employed. The person performing the act must have the required amount of skill and knowledge as well. The standard of care employed classifies negligence broadly into two types, ordinary negligence, which refers to the breach of duty to take care resulting in only civil liability, and gross negligence which is a greater deviation from the required standard of care.[27]

There are two theories given by Sir John Salmond and Sir Frederick Pollock, which are known as the subjective and objective theories of negligence, respectively.[28]The former states that negligence is the attitude of indifference by one concerning his actions and their consequences. The latter theory is based on the law of tort, which says that negligence is the failure to achieve the standard of care or in other words, breach of duty to take care. Such failure may result due to various factors such as ignorance, inadvertence, etc.

B. LIABILITY IN CASES OF NEGLIGENCE

The liability in cases of negligence could be imposed either on the AI itself or the programmer or user. However, the imposition of such liability on AI requires it to be granted personhood. As already noted, AI is incapable of holding rights and duties and hence, cannot be held accountable. It is crucial to determine the essentials in case of AI systems. The duty to take care generally means the duty of the programmer or the vendor towards the customer to build and sell a product or service which is free from manufacturing defects. No such duty of care can be expected from robots because such duty is that which a prudent man would undertake in the ordinary circumstances and varies every time. There are numerous other circumstances in which their actions cannot be ascertained, and such cases will result in damages. The duty of care in such cases is thus left to be determined by the judges based on the circumstances. There are various manners by which an AI framework can break the obligation of standard of care which include: mistakes in the program's function that could have been distinguished by the developer, a wrong or deficient knowledge base, insufficient documentation, not updating information from time to time, user's providing flawed information or utilizing the system for

[27] *Id.* at 386.

[28] *Id.* at 390.

a wrong purpose. [29] The question of whether AI will be held liable for damages caused due to breach is a debatable one.

Criminal liability typically needs action as well as mental intent. There are three circumstances of criminal liability that could be applied to AI systems. The first one is known to be the perpetrator via another, which states that a mentally deficient person cannot be held guilty on committing an offense.[30] However, the person on whose direction such deficient person acted can be held criminally liable. This has implications for the designers of such AI machines and those who use them. An AI system can be absolved from such liability under this principle and imposes it either on the developer or user. The next scenario is when the AI is said to cause injuries or harm under ordinary circumstances. The liability will lie on the programmer if it can be proved that he was aware of such outcomes of its use. The third case deals with direct liability where an act of omission or commission results in criminal liability when there is a duty to act.

Every AI system should be up to date, and there should be no scope for negligence. This is the ideal standard of care that is to be taken when such a system is sold to the customers. The AI systems should possess particular interests if it is to be granted rights. However, robots share the interests of humans and have no interest of their own. Hence, they cannot be given rights. Free will, which is another essential ingredient, is not available to robots, thus denying them legal personality. In such cases, it is not practical to impose liability on them. AI is said to be negligent if it was unaware when it was capable of being aware and had a duty to do so. The capabilities of the AI ultimately depend on the programmer. Although such robots may be relatively advanced, their intelligence is still limited and subject to commands given by humans.[31] The purpose of criminal law is to punish the wrongdoers so that they learn a lesson and do not repeat the same kind of offenses. It seeks to create fear in the minds of AI and people, contributing compliance with the law. Such a capability to learn from mistakes can be expected from machine learning systems, but this does not mean that there is no scope for future damages. The reasonable person's standard should take into account relevant considerations by assigning

[29] Kingston, J. K. (2016, December). Artificial intelligence and legal liability. In *International Conference on Innovative Techniques and Applications of Artificial Intelligence* (pp. 269-279). Springer, Cham.

[30] *Id.* at 3.

[31] Hart R. D., *Saudi Arabia's Robot Citizen is Eroding Human Rights*, Quartz, available at https://qz.com/1205017/saudi-arabias-robot-citizen-is-eroding-human-rights/ (last accessed 12 February 2020).

proper weight to these considerations. Such a method cannot be followed by a machine. Another side to this is that of the victims. The main goal of the victim is to ensure that the offender is penalized for the damages that have been caused to him. The severe punishment that the offender is sentenced to satisfies the victim. Such punishments have no impact on machines. The machine cannot suffer for the damage that it has caused, and therefore, such liability on the machine is not encouraged.

Criminal law aims to punish offenders. Such punishment has the following purposes: retribution, deterrence, rehabilitation and incapacitation.[32] Retribution means "an eye for an eye". This means to put the offender through the same suffering that he caused to the victim. Its purpose is to satisfy society. Deterrence aims at preventing or stopping such activities by instilling the fear of punishment among the offenders. It uses intimidation to prevent the repetition of the offense. Rehabilitation focuses on finding the cause of such delinquency and then assigning the punishment. Incapacitation means to neutralize the capabilities of the offender to ensure that such damages cannot be repeated.

Negligence, on the part of AI systems, poses greater threats in the medical field. It arises when the patient can substantiate with evidence by resorting to technology that the practitioner has failed to comply with the standard of a "reasonably skilled and experienced doctor". The issue of liability in such cases arises because there cannot be a clear difference between the foreseeable and unforeseeable risks.[33] In the case of risky medical practices, any error on the part of the AI system will result in the death of the patient. The medical institutions, as well as the doctors, owe a duty of care to the patient and hence, can be held liable too. AI technology solely depends on the data input. The outcome is the result of such inputs, and the liability should extend to the Manufacturing institution. AI does not fit into any of the private law regimes, and so it is necessary to create compensation schemes for the patients who suffer from the harm caused, however small it may be. These compensation packages will be funded by the developers and manufacture for covering health damages caused due to errors[34]. The question of holding the AI itself liable cannot be raised as this will require it to be granted personhood.

[32] Hallevy, G. (2013). *When Robots Kill: artificial intelligence under criminal law*. UPNE.

[33] Goncalves, M. A. (2018). *Liability arising from the use of Artificial Intelligence for the purpose of medical diagnosis and choice of treatment: Who should be held liable in the event of damage to health?* Tilburg University.

[34] *Id*. at 49

Such a person cannot be granted for the reasons mentioned earlier. The developer or the user is to be held liable depending on the nature of the risk.

It is complicated for the programmers, operators, and users to escape liability for their criminal acts and impose it on the AI. The decision of assigning AI system an autonomous identity, abiding by its suggestions are subject to negligence offenses as well.[35] Although the AI system is capable of meeting a few of the requirements of negligence, it does not mean that other individuals involved in the situation are absolved from criminal liability. Humans involved in the designing, programming, and operation of AI technology can also be held liable. If the users or programmers had knowledge of the nature of the criminal offense and its consequences, they could be held liable. However, such liability depends on the risk. The problem of determining the cause of the error is not easy due to the complex system of AI. However, if humans are held merely liable for damages caused, they will not undertake such risks in the future. In the case of medical negligence, if doctors are held liable, there is a risk of them not adopting such AI technology even though it has been proved to have higher accuracy rates. This leads to a compromise of such merits ignoring the interests of the society at large. Therefore, it makes more sense to impose such liability only on the manufacturer or developer. AI is used by these manufacturing authorities because of the endless advantages that they provide. Hence, only they should be held liable.

[35] Hallevy, G., *supra* note 31 at 44.

IV. CONCLUSION

Artificial Intelligence plays a significant role in modern society and is a sign of development. It has become a part of our day to day lives, and as such, it also poses the threat of injury to humankind. The imposition of criminal liability on them is not feasible because they are not considered 'persons' and such punishment does not affect machines. The main aim of criminal law is to punish the offenders. Such punishment has the following purposes: retribution, deterrence, rehabilitation and incapacitation.[36] The first three types cannot be applied to AI entities for the simple reason that they are not 'persons', but mere machines and such punishments will not serve the purpose. Incapacitation, on the other hand, means to neutralize the capabilities of the robot that it will not be able to perform, and hence, it will not cause any damage. Such punishments are not beneficial even if the AI is a machine learning system. Ultimately, the outcomes depend on the input that is fed into it.

However, such punishments do have an effective result on humans. Human beings are natural creatures with the ability to 'feel'[37] and liability for the wrongful act as per a rational being is an incentive rather than a deterrent because it ensures compliance with the law to prevent such injuries in the future. Humans play a significant role as developer and users. Users of AI cannot be held liable for the errors caused because users have the minimal technical knowledge, hence making it unable to determine the cause of the risk. Such risks can be identified only in some instances and only with the help of the manufacturer or the developer. The AI system was introduced with the purpose to ease the life of humans and help them face new challenges. One should not be discouraged to take risks, and negligence is not intended to inhibit it, and therefore, society encourages taking risks in many situations. If such risks are not taken, human development will come to a standstill. Therefore, such developments should continuously be undertaken, and liability in case of negligence should be imposed on the manufacturers. All credits for the successful acts carried out by AI is attributed to the manufacturer, and hence, such liability should also be imposed on him.

With every great innovation comes a certain amount of risk. The is a high demand for AI in every industry, and they are proving their capabilities to a whole new level. This technology,

[36] Hallevy, G., *supra* note 31 at 157.

[37] Solaiman, S. M., *supra* note 14 at 3.

which is created by humans is capable of killing us in the near future. However, continuous research and laws and guidelines are being framed for such protection. One should not forget that the primary concern shall always be the welfare of human beings. The present ambiguity that is surrounding the issue of liability has indeed plagued the future development of artificial intelligence and the formation of common standards, creating an environment where specific sectors have been disinclined and hesitant than others to roll out artificial intelligence systems, despite their revolutionary abilities. Clarification and simplification in law would perhaps lead to more decision-making transparency, opening up more extensive options and possibilities in terms of opportunities to improve coherence and also as a measure for safety and security.