WANDERING WITH ARTIFICIAL INTELLIGENCE AND ITS OBSCURE LEGAL LIABILITY

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Abstract

The high level of autonomy of AI will raise the problem of legal liability sometime in the future. If AI's behavior causes an illegal consequence, who is to be held liable? This article will explore the problem concerning the legal liability of AI in two main discussions. The first discussion will explore the possibility of imposing legal liability on AI to human beings. This part will discuss the various available options to solve the AI liability problem by imposing legal liability on either users or manufacturers. While the second discussion will explore the possibility of imposing legal liability of AI to AI itself. This part is a different discussion area based on experimental legal thinking and hypothetical scenario to test the possibility of imposing legal liability on AI either as an artificial person just like a corporation or as a natural person just like a human being. This article concludes that imposing legal liability on both users and manufacturer are very problematic. Meanwhile, imposing legal liability on AI itself faces a serious philosophical and sociological challenge.

Keywords: *Artificial Intelligence; Autonomous Machine; Law and Morality; Legal Personhood; Liability.*

Abstrak

Tingkat otonomi AI yang tinggi akan menimbulkan suatu persoalan pertanggungjawaban hukum di masa depan. Jika perilaku AI menimbulkan suatu akibat hukum yang dilarang, maka siapakah yang harus bertanggung jawab? Artikel ini akan mengeksplorasi persoalan pertanggungjawaban hukum AI tersebut ke dalam dua pokok pembahasan. Pokok pembahasan pertama akan mengeksplorasi kemungkinan pertanggungjawaban hukum AI oleh manusia. Bagian ini akan mendiskusikan pilihan-pilihan yang tersedia untuk menyelesaian persoalan pertanggungjawaban hukum dengan berusaha meletakan pertanggungjawaban tersebut diantara pengguna atau produsen. Sedangkan pokok bahasan kedua mengeksplorasi kemungkinan pertanggungjawab hukum oleh AI itu sendiri. Bagian ini adalah area diskusi berbeda yang didasarkan pada eksperimentasi pemikiran hukum dan skenario hipotetikal untuk menguji kemungkinan menempatkan pertanggungjawaban hukum kepada AI sebagai artificial person sebagaimana badan hukum dan sebagai natural person sebagaimana manusia. Artikel ini berkesimpulan bahwa penempatan pertanggungjawaban terhadap produsen dan pengguna sangat problematis dan belum ditemukan pemecahan persoalan untuk menjawab hal tersebut. Sedangkan penempatan pertanggungjawaban terhadap AI menghadapi rintangan serius dari segi filosofis dan segi sosial.

Kata Kunci: *Kecerdasan Buatan; Mesin Otonom; Hukum dan Moralitas; Kepribadian Hukum; Pertanggungjawaban.*

I. INTRODUCTION

Ray Kurzweil stated that technology is growing exponentially.[1] Twenty-two years after the Grandmaster of the world chess champion Garry Kasparov was defeated in a match against Artificial Intelligence (AI), AI had become very complex. Currently, AI can diagnose strokes from MRI images with precision similar to a human doctor.[2] The development of AI has also penetrated everyday life such as household appliances and transportation. In the transportation sector, the technology has enabled car users to no longer drive their vehicles manually.

AI can be defined as *"the ability of digital computers, or computer-robots, to perform tasks commonly associated with intelligent beings."*[3] The word 'intelligent' is often referred to as human intelligence, such as thinking, finding meaning, generalizing, and learning from experience.[4] AI can be classified into three categories based on intelligence level; Artificial Narrow Intelligence or Weak AI, Artificial General Intelligence (AGI) or Strong AI, and Artificial Super Intelligence (ASI).[5]

Weak AI refers to AI with a limited and specific scope of intelligence.[6] It can be found on online language translation sites, plagiarism checkers, personal assistants like SIRI, and autonomous vehicles. On the other hand, AGI refers to AI with problem-solving abilities equal to humans.[7] To be classified as AGI, AI must have the ability to solve problems in various fields, although it can also have specialties in a specific field. AGI must also be able to learn from its environment and solve problems it has faced before more efficiently.[8] Meanwhile, Artificial Super Intelligent is an AI with an intelligence level that exceeds humans.

Be it ASI or AGI, both technologies have yet to be achieved by current technological advancement. Although the technologies do not currently exist, AGI and ASI have various potential utilities. Judging from how AI is currently utilized, the future discovery of AGI can increase AI involvement in human societies to the level that AI may become an integral part of human society. However, this will raise problems.

Given the high level of autonomy, sometime in the future when AI's action causes an illegal consequence the problem of liability will surely arise. Who is to be held liable? Would the humans be held liable? If so, should the liability be held by the user or the manufacturer of AI? Or is it possible for AI to bear its liability by 'itself'? Would the existence of AI force mankind to rebuild the legal structures that have been built on top of society with humans as the "main actors"?

This article will discuss the issue of AI legal liability around those questions in two discussion sections. The first part will discuss in what situation humans should be held responsible for AI's 'behavior'. The first section's discussion will focus on narrow

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[1] Tad Simons, "Understanding Exponential Tech Growth And Its Impact On The Legal System," *Thomson Reuters Institute*, 2021, https://www.legalexecutiveinstitute.com/understanding-exponential-change.

[2] Fei Jiang et al., "Artificial Intelligence in Healthcare: Past, Present and Future," *Stroke and Vascular Neurology* 2, no. 4 (2017): 230–243: 230. https://doi.org/10.1136/svn-2017-000101.

[3] *Ibid.,* 230.

[4] *Ibid.,* 230.

[5] Mirjana Stankovic, "Exploring Legal, Ethical and Policy Implications of Artificial Intelligence," in *Global Forum on Law, Justice and Development CoP on Legal and Ethical Aspects of Bioprinting*, (2017): 5.

[6] *Ibid.,* 5.

[7] *Ibid.,* 5.

[8] Ben Goertzel, *Artificial General Intelligence*, *The Dictionary of Genomics, Transcriptomics and Proteomics* (Rockville: Artificial General Intelligence Research Institute, 2015): 7. https://doi.org/10.1002/9783527678679.dg00701.

AI with a limited and specific scope of intelligence. The second part will discuss what criteria to fulfill to make AI liable for 'itself.' The discussion in this section is generally based on a hypothetical scenario of when AI has reached a genuinely autonomous level of intelligence (AGI) so that the responsibility imposed on humans becomes difficult to accept even more.

II. HUMAN LIABILITY

In a nutshell, to be held liable a person needs to fulfill two elements of *actus reus* or material elements of a crime and *mens rea* or subjective elements of a crime.[9] The subjective element of crime requires culpability, be it purposely or negligently.[10] Purposely means a person is considered to be able to imagine, know, or predict the consequences of his actions. Meanwhile, negligence is the presence of carelessness accompanied by a certain degree of knowledge of the consequences or risks of such carelessness.[11] In the material corpus delicti, it also must be proven that there is causality between the perpetrator's actions and the illegal consequence.

Meanwhile, in civil law, a person can be held liable for a tort, namely actions that violate others' rights, the perpetrators' duties, or (in the context of Indonesia) even morals and social norms. If the perpetrator is culpable for the act, then the perpetrator can be held liable.[12] Generally, legal liability requires the subject to know the consequences of the act of doing it or not doing it. The perpetrator must intend his/her actions.

Unfortunately, some concept parameters will lose their relevance if an illegal consequence occurred due to AI's actions. Its autonomous nature makes AI more than simply a "tool." Conventional tools commonly need to receive input from human action to be functional. For example, a knife needs input in the form of a swing by the perpetrator to cause injuries to the victim. Therefore, it can be considered that there is a clear causality between the perpetrator's action and the victim's injury.

AI-operated tools, on the other hand, can act without any further input. When the tool is activated, AI can make decisions independently based on a range of choices of action without any further input or orders, thanks to automated decision making (ADM) technology. ADM refers to an algorithm that can choose an output from random or ambiguous inputs by determining the most optimal choice.[13]

ADM capability is made possible through machine learning technology. These technologies generally use artificial neural networks (ANN), which resemble biological networks in the human brain. ANN uses a tremendous amount of data obtained through its sensors to be analyzed to generate the best output. It is similar to how the human brain works. It also allows AI to perform autonomous actions.[14] In a given condition, both the culpability and the causality between the perpetrator's actions and the illegal consequence are not fulfilled.

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[9] Siswanto Sunarso, *Filsafat Hukum Pidana: Konsep, Dimensi, Dan Aplikasi* (Jakarta: Rajawali Pers, 2015), 172-173.

[10] Ernst Utrecht, *Rangkaian Sari Kuliah Hukum Pidana* (Bandung: Universitas Padjadjaran, 1958), 252.

[11] Utrecht, *Hukum Pidana,* 300.

[12] R. Setiawan, *Pokok-Pokok Hukum Perikatan* (Bandung: Percetakan Binacipta, 1987), 83-85.

[13] Evan Joseph Zimmerman, "Machine Minds: Frontiers in Legal Personhood," *SSRN Electronic Journal*, (2015): 14. https://doi.org/10.2139/ssrn.2563965.

[14] *Ibid.,* 14.

The user does not exercise control over AI's choices since the effect is caused solely by the AI's decision, as it is technically an autonomous entity.[15] Moreover, AI also possesses the ability to reprogram itself autonomously based on the obtained information. In other words, AI can learn things that previously did not exist in its original program, not much different from how a human learns an athletic skill that he was previously not capable of.[16] Since AI can act autonomously, AI can also act independently from the user's will and approximation. Therefore, the ability to predict the consequence in the context of negligence would not be met by both AI users and manufacturers.

The closest problem with AI in a current technological advancement is the liability problem of autonomous cars. If an autonomous car with a high degree of autonomy causes an accident that results in harm, who should be held liable? However, an accident resulting from AI's autonomous decision occurs without any user's input, and at the same time, without any specific instructions from its manufacturer. The user exercises no direct control since all choices and decisions are made by artificial intelligence.

Apart from autonomous cars, such problems are also very likely to occur in events or accidents caused by AI-operated tools. Whether in the fields of construction, manufacturing, or health, when these autonomous tools cause harm or illegal consequence, it is difficult to blame both user and manufacturer considering that there is no causality between them and the consequence generated by AI.

A. Placing Legal Liability on The Production Chain

Let us begin this section with a discussion about product liability. Product liability is utilized in and is an essential element of consumer protection law. The main idea underlying consumer protection is that the producer of the products is obliged to meet certain conditions to fulfill the buyer's rights as promised in the transaction. If a defect is found later, or the condition of the product does not fulfill what was promised in the transaction, the producer must be responsible, especially if it causes harm.

Contextualizing the way of thinking about product liability with the utilization of AI can be started by discussing airbags. Airbags are security tools provided by car manufacturers to reduce the effects of collisions on the passenger. The airbag is a part of the vehicle that works automatically. The airbag function is not enjoyed through activation or input by the user; instead, the function is enjoyed when the vehicle receives particular external input from non-users, in this case, a collision.

If the airbag fails to function, either because of a design defect or manufacturing defect, it is reasonable to impose liability on the manufacturer. Liability arises from the fact that there are defects and unfulfilled conditions in the product promised by the manufacturer. The problem is, that we cannot always classify AI's actions that cause illegal consequences as a defect. Product liability will only work if the harm is caused due to a design or manufacturing defect. This means that the idea only works if the product has automated capability without intelligence such as an airbag.

Automated products only have two choices, whether they should function as they should be, or not—thus defective. Because, despite the machines being automated,

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[15] *Ibid.,* 24.
[16] *Ibid.,* 16-17.

the actions are strictly pre-determined in the program from the very beginning. Unlike AI which has intelligence capability (autonomous), products with only automated capability do not have a range of choices of actions to make. In other words, products with only automated capability cannot act beyond their explicit program. Therefore, if the product work improperly, it must be caused by design or production defects.

Unfortunately, AI has gone quite far from that. With machine learning technology, AI is capable of doing something beyond its explicit program. Instead, AI can act under its subjectively-learned experience.[17] Machine learning technology does not make AI entirely rely on human program design; we also can build AI through pattern recognition and data linking. Also, AI's decisions made by machine learning processes are, in principle, sometimes incomprehensible to the programmer.[18]

Currently, there are three categories of machine learning methods, which include;

1) Supervised Learning: This method provides input to algorithms accompanied by the correct answers. For example, when an algorithm has to distinguish between faces and objects, the input will be two images of faces and objects as well as clues given by humans that one is an image of a face and the other is an object.[19]

2) Unsupervised Learning: This method is similar to the method above, the difference is that this method will not give a correct answer. For example, in distinguishing faces and objects, humans will not provide clues, but the machine must find for itself the differences that arise from inputs, which are only faces and objects.[20]

3) Reinforcement Learning (RL): This algorithm does not try to determine what is right and what is wrong, but it uses an action and reward system, which means that AI is programmed to maximize the rewards obtained from an action. So, in this case, the RL algorithm can use two or more actions to determine how the maximum reward can be obtained, so in other words, the process of taking this action cannot be determined by the programmer either."[21]

One can imagine in a hypothetical scenario, an autonomous vehicle programmed to perform a safe drive for its user. With RL methods, throughout its use, the machine can learn that in some situations, it is necessary to make some maneuvers to increase the safety level of the driver. In another specific situation, to increase the safety level for the driver, AI must perform a maneuver that reduces the safety level for other drivers or pedestrians.

As a result, AI could learn that in some situations, it is necessary to reduce other people's safety levels to increase the driver's safety level. The accumulation of experience in that direction allows AI to be placed in a situation where it potentially needs to choose to sacrifice other drivers' safety as an act of providing security for its users. In that scenario, the illegal consequence solely produced by an AI's action cannot easily be classified as a product defect.

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[17] *Ibid.,* 7-9.

[18] Argyro Karanasiou and Dimitris Pinotsis, "Towards a Legal Definition of Machine Intelligence: The Argument for Artificial Personhood in the Age of Deep Learning," in *Proceedings of the International Conference on Artificial Intelligence and Law* (London: Association for Computing Machinery, 2017): 119–128: 119-125. https://doi.org/10.1145/3086512.3086524.

[19] *Ibid.,* 119-125.

[20] *Ibid.,* 119-125.

[21] *Ibid.,* 119-125.

After all, the manufacturer did not deliberately program the AI to choose to sacrifice other people to save another, nor negligently produce a defective product. The product works as it should be and the choice of action is solely based on the fact that the machine itself can learn from experience cumulatively. That means that the production chain can no longer be held liable. Therefore, it is very problematic to impose liability on either the programmer or the manufacturer.

In criminal law, we can rebuild the previous discussion based on the concept of omission. In Indonesia, violations of consumer protection are also punishable as a crime. Manufacturers have a legal obligation to meet minimum safety standards to protect consumers. Failure to fulfill these obligations is punishable under Law Number 8 of 1999 concerning Consumer Protection. There is no need to discuss a scenario when the failure was done intentionally or negligently in the production process, such as a programming error because the answer is quite clear.

The debate arises when the danger occurs in the after-production phase (after completing the learning process) when the illegal consequence is purely generated through AI's learning capabilities. Would the manufacturer consider to be negligent? Negligence itself requires the perpetrator to be able to suspect illegal consequences generated by their carelessness. Between these acts of carelessness and the illegal consequence, there must also be causality.

If the AI's choices of action are based on what the program learns independently, the programmer can't possibly expect every possible illegal consequence that might arise. Moreover, there is an enormous amount of data and a huge number of variables that can determine how AI makes decisions and react to various situation. That alone made it impossible for any programmer to predict future AI behavior and choices of action.

It means that placing legal liability on the manufacturers is unjustified. Since in any harm generated by the AI, the manufacturer or programmer is not involved because the AI chooses its actions without further input from the manufacturer or programmer, and not all harmful behavior is a product of defects. Another idea is to assign strict liability to the devices operated by AI.[22] This idea can be used to impose liability on those manufacturers.

From a social perspective, the innovation that gave birth to AI utilization in daily life is a response to a problem concerning human errors.[23] In the transportation sector, for example, the dominant factor causing accidents is human error.[24] The imposition of liability on both producers will lead to disproportionality. Since imposing legal liability on them will cause fear and slow down the development of the technology itself.[25] If this technology's use and development are hampered, the human error-

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[22] Lee Gluyas and Stefanie Day, "Artificial Intelligence Should There Be a Strict Liability Regime for AI Claims?," CMS, 2020, https://cms.law/en/svk/publication/should-there-be-a-strict-liability-regime-for-ai-claims.

[23] John Villasenor, "Products Liability Law As A Way To Address AI Harms", Brookings, 2021, https://www.brookings.edu/research/products-liability-law-as-a-way-to-address-ai-harms/#:~:text=Under%20strict%20liability%2C%20manufacturers%E2%80%94including,manufacturing%20defect%2C%20or%20manufacturer%20negligence.

[24] Guritnaningsih Guritnaningsih, Tri Tjahjono, and Dewi Maulina, "Kelalaian Manusia (Human Error) Dalam Kecelakaan Lalu Lintas: Analisis Berdasarkan Pemrosesan Informasi," *Journal of Indonesia Road Safety* 1, no. 1 (2018): 30-38: 36. https://doi.org/10.19184/korlantas-jirs.v1i1.14772.

[25] Paulius Čerka, Jurgita Grigienė, and Gintarė Sirbikytė, "Is It Possible to Grant Legal Personality to Artificial Intelligence Software Systems?," *Computer Law and Security Review* 33, no. 5 (2017): 685–99: 12-13. https://doi.org/10.1016/j.clsr.2017.03.022.

related problem that we crave to surpass with AI will be even farther from success. Therefore, this option is also unpreferable.

B. Placing Legal Liability on User

This section will not discuss the purposely expected harms generated by a deliberate misuse of AI by its users since the problems are clear enough. Rather, the question underlying this section is; is it possible that AI's actions are imposed on the user based on negligence? In Indonesian law, an action is considered to be negligent when it met criteria such as (1) illegal consequence (2) carelessness, (3) the perpetrator can suspect a possible result, and (4) causality.[26]

The issue of causality will face the same problem as the previous idea; it is difficult to say that there is a causal relationship between the user's act or absence of action and the illegal consequence arising from AI. In the autonomous car analogy, the user's position is only as a person present in the car but does not hold any direct control. Indeed, the term "cause" does not have to be positive actions; absence and omission can also be "causes."

For example, if we ignore someone who needs our help to save their lives while we have the capacity, ability, and all means to help them, we can be held liable for negligence. Unfortunately, in the context of AI, not every absence of action can be considered an omission. However, we must be clear and not get trapped in the old paradigm of how conventional machines or tools works.

In conventional machines or tools, such as cars, the users can be considered negligent if their absence from driving causes an illegal consequence. Because the user can expect or predict the reasonable possibility that their absence from control could generate an illegal consequence. That predictability comes from the general understanding that the proper way to use a conventional car is by controlling it. In that case, the user is expected to act and intervene to make the tool work properly to avoid possible illegal consequences.

In the case of autonomous cars or autonomous machines in general, the absence of a user cannot be considered negligence, simply because the proper or expected way to use an autonomous machine is to not provide any human input or intervention. It means that the absence of user intervention cannot be considered as that; "the user does not function the tool/machine properly or as expected or as supposed to be," resulting in illegal consequences. Also, expecting users to predict is just as problematic as the first discussion idea since AI decides all decisions.

So, it seems that imposing liability on users based on negligence is very problematic. However, it is possible to overcome the problem with an 'equally problematic' mechanism, but (probably) less controversial. If users cannot be considered negligent because of the inability to predict the consequence of their absence (since they are not expected to intervene), what if the State obliges manufacturers to add a mechanism in the device to make users know of possible errors. For example, all AI is equipped with the ability to predict potential system failures and provide early warning of every chosen action to its users.

If the user is given an early warning of all potential choices of action, they become aware of and can rationalize possible outcomes or consequences such as collisions.

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[26] Andi Hamzah, *Asas-Asas Hukum Pidana*, Revisi 200 (Jakarta: Rineka Cipta, 2008), 167.

It means that in this situation, the user is placed in a situation that forces him to intervene, replace AI, and try to prevent illegal consequences. With this mechanism, the arguments for the inability to predict and the user's absence are invalidated.

Nevertheless, such a system seems like a trap since the potential harms caused by AI are being forced to be attributed to the user, especially if the warning sign appears in an irreversible situation. This mechanism will have the effect of preventing people from using AI by invalidating the main meaning and purpose of AI utilization because the user still has no freedom and is still expected to intervene much. There is no strong justification for this idea.

There is also a similar concept concerning this problem: the liability relation between the pet and the owner. In essence, the relationship between a pet and its owner is a forced liability, in the sense that the owner is liable for the illegal consequence generated by their pet (strict liability).[27] In comparison with AI, the animal is also an autonomous individual who can make decisions based on their subjective experience. In the case of an animal, the owner does not always know or able to predict what the animal will or potentially do. However, owners can be held liable for negligence, absence, or not taking necessary measures to prevent their pet's behavior, which may result in an illegal consequence.

The problem is that AI and animals are not analogous when discussing liability. AI is basically used to provide users with a free experience where some work is done autonomously by AI. So, the enjoyment of these kinds of tools is by generating freedom for the user. In comparison, pets' enjoyment is generally obtained by giving them affection. Although the goals of having a pet may vary, the central concept of having a pet is to keep other species in the desire to take care of them.[28] In a nutshell, the correct way to enjoy AI's function is by not acting, whereas the correct way to enjoy the functions of pets is by the act.

Also, it is easier for animals to be physically isolated to limit their movement. On the other hand, the enjoyment of AI-controlled machines is basically by intentionally placing AI in a highly exposed situation to the possibility of causing illegal consequences. For example, the only way to use an autonomous car is to let it drive on the road, exposed to all kinds of potential consequences; the only way to function construction AI-robot is to let it do construction work, which means deliberately exposing the machine to any possibility to cause harm.

Although this issue may not be too controversial, it remains problematic because it imposes a substantial risk of unjustified liability to the users. Besides, all options discussed will lose their relevance when AI technology becomes more autonomous, for instance, when humans reach AGI technology. All discussed options above only apply to the Narrow AI model with specific and relatively static capabilities while still having high autonomy. Therefore, imposing AI legal liability on users is also unjustified.

When humans reach AGI, it is possible to start shifting this debate on whether AI can take liability independently. If possible, under what conditions can AI be imposed liability independently? AGI technology offers mankind vast new possibilities. With

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[27] European Commission - Expert Group on Liability and New Technologies – New Technologies Formation, *Liability for Artificial Intelligence and Other Emerging Digital Technologies* (EU: European Union, 2019), 26. https://doi.org/10.2838/25362.

[28] Amy Tikkanen, "Pet | Animal", Encyclopedia Britannica, 2021, https://www.britannica.com/animal/pet.

human-equivalent capabilities, AI can replace humans' roles even more broadly, for example, as caregivers of the elderly, personal assistants, and so on. These activities allow these machines to be placed in situations where "they" have to make transactions, enter into agreements, and engage in obligation. Therefore, considering AI as a separate legal subject is a topic that soon will be very urgent.

III. AI LIABILITY

When it comes to legal liability and AI, there is a tendency to avoid attributing liability to AI. The reason for this avoidance is clear, because generally in the current positive legal framework (specifically in Indonesia), machines are not persons, either fictitiously or naturally. It means that the machine is not an entity capable of bearing duties, which is the most important aspect of the concept of liability. Even so, legally making AI the bearer of rights and duties is possible.

Probably in the current technological advancement, the discussion about machine liability seems irrelevant. Nevertheless, for the sake of discussion, this section will present a kind of thought experiment by questioning, 'if AI has to be liable as an independent individual, when should AI be considered to be able to bear legal liability?' This section is not an attempt to provide answers and solutions to the problems revealed in the previous section, but rather a new discussion area based on hypothetical cases and experimentation with legal thinking.

Several things need to be raised in order to carry out this thought experiment. First, if the liability arises from a violation of one's duties, AI must be constructed as an entity that can bear the duties. It means that to be responsible, AI needs to be at least a legal person. This is where we will open a question to explore; can we construct AI as a legal person? Can we recognize the AI's legal personhood?

A. AI as an Artificial Person

When it comes to personhood, there are two types of personhood known in law; natural personhood and artificial personhood. A natural person simply refers to human beings who are also persons. To be clear, it means human beings in a biological sense, who are also persons in the sense that based on specific legal criteria are considered to be the bearer of rights and duties. Meanwhile, an artificial person is entities that are based on specific legal criteria considered to be the bearers of the rights and duties (person), but it does not need to be human.[29]

In Indonesian law, an artificial person's recognition is based on Article 1654 of the Indonesian Civil Code, which stipulates that "legal entities" have the power to perform civil acts. As a person that can take action in civil law, an artificial person can perform a transaction or other actions such as being a party to an agreement.[30] Besides, an artificial person can also be imposed civil liability without directly imposing it on its owner or member. Therefore, some artificial person occupies a unique position as a legal subject while simultaneously also an object that can be owned collectively.[31]

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[29] Elvia Arcelia and Quintana Adriano, "The Natural Person, Legal Entity or Juridical Person and Juridical Personality," *Penn State Journal of Law & International Affairs* Vol. 4, no. Issue 1 (2015): 362–91: 366. http://elibrary.law.psu.edu/jlia/vol4/iss1/17%0AThe.

[30] Riduan Syahrani, *Seluk-Beluk dan Asas-Asas Hukum Perdata*, (Bandung: Penerbit Alumni, 2006), 51.

[31] Katsuhito Iwai, "Persons, Things and Corporations: The Corporate Personality Controversy and Comparative Corporate Governance," *American Journal of Comparative Law* 47, no. 4 (1999): 1-62: 7.

Of course, as a non-human legal subject, an artificial person cannot exercise rights that are closely tied to human nature, such as marriage. Although laws and regulations have extensively described such artificial persons' rights and obligations, there is no explanation of why those kinds of entities deserve legal personhood considering an artificial person does not have a human nature. There is a view that legal entities are given limited legal personhood because the State, through the law, wants it to. This view is called the theory of fiction.[32]

As an alternative, Organ Theory views that legal entities have legal personhood because legal entities are not abstract concepts but exist as reality. An artificial person has their own will, can take legal action through their intermediaries, and have their own senses. According to this view, a legal entity is no different from an actual organism.[33] Some think that artificial persons are given legal personhood status because it reflects their role as organizations and companies in society. Legal entities engage in agreements, own assets, and employ people. The granting of legal personhood status by the State is only an acknowledgment of the actual entity's legal role.[34]

AI, similar to a legal entity is an entity that is not human. Both are capable of taking action and making decisions that have legal consequences.[35] Also, with AI's development in various fields, the AI's involvement in human society will become as real as those of companies and organizations. AI also has a will of its own; it can act both independently and through an intermediary. Furthermore, AI can have its own "senses" in the form of data input and processing capabilities. If the State grants artificial personhood status to a legal entity for all the aforementioned reasons, the State can also do the same with AI.

Therefore, if what we mean by personhood refers to artificial personhood, we can also consider AI as a legal person to a certain degree. There is no severe theoretical obstacle if we want to grant AI an artificial personhood status to bear rights and duties (legal subject). Instead, a severe problem will arise in deciding the personhood model of the AI. However, the recognition of AI's legal personality will create civil liability that is generally carried out through compensation in the form of monetary awards.[36]

Constructing AI as a legal person results in a separation of legal personality between the AI and the owner. In the case of the corporation, for instance, legal personhood results in a separation of assets between the owner and the corporation.[37] Whether it is to pay off debts or to pay off compensation, the corporation uses its own assets obtained from its business. However, AI does not have its own assets. Will AI, which is

https://doi.org/10.2307/841070.

[32] Syahrani, *Asas-Asas Hukum Perdata.* 51.

[33] *Ibid.,* 51.

[34] Čerka, Grigienė, and Sirbikytė, "Legal Personality to Artificial Intelligence," 5.

[35] *Ibid.,* 5.

[36] Sri Redjeki Slamet, "Tuntutan Ganti Rugi Dalam Perbuatan Melawan Hukum: Suatu Perbandingan Dengan Wanprestasi," *Lex Jurnalica (Journal of Law)* 10, no. 2 (2013): 107–20: 113. https://media.neliti. com/media/publications/18068-ID-tuntutan-ganti-rugi-dalam-perbuatan-melawan-hukum-suatu-per-bandingan-dengan-wanp.pdf.although both are derived from the engagement, the engagement konpsesi defaulting from the birth of the agreement and the conception of tort comes from the birth of the engage-ment of the law. Besides the differences are also apparent from the compensation charged. Based on this study intended to examine the conception of tort law and breach of contract in civil law and the claims for compensation due to due to unlawful act or breach of contract action (default

[37] Indonesia, Undang-Undang tentang Perseroan Terbatas (Law regarding Limited Company), UU No. 40 Tahun 2007, c1, article 3.

required to pay compensation, automatically be declared bankrupt?

It is necessary to provide assets for AI so that it can be used to pay compensation when needed. Through this system, some natural person or any person capable of bearing property rights is required to provide assets for the AI. Logically, it is the owner who is obliged to provide this capital. Technically, the owners are still responsible for AI's actions, so AI's legal personhood status does make no real difference with those that are imposing the liability on the owner in the first discussion.

This scheme is also highly problematic in a way that, unlike corporations, the machines act autonomously, whereas, in the case of a corporation, the corporation's actions are a manifestation of human actions and wills. We need to remember that the idea that AI should become a legal person is an attempt to prevent humans from being liable for AI's actions that have no direct relation to human actions.

Outside the civil sphere, attaching criminal liability to AI will create similar problems. In corporate criminal law, there is a tendency to use the principle of vicarious liability, in which the company's criminal actions will be imposed on its management (human agent).[38] Unfortunately, the idea is problematic in the context of autonomous entities such as AI because it means that we will punish the owner as they are the person behind AI's legal personhood.[39] Unlike legal entities, AI's actions are not a manifestation of human will and actions.

Therefore, it is unjustified to convict AI in such a criminal framework. In terms of punishment, the problem still stands. Criminal law recognizes several forms of punishment such as imprisonment, fines, impairment of specific body capacity, and rehabilitation. Confinement and fines are irrelevant to AI and will be very problematic if applied to the owners. Impairment of specific body capacity is a type of punishment that includes the controversial punishments of castration and other body mutilations. Conceptually, it is possible to apply this kind of punishment to AI.

That type of punishment would involve deactivation of the AI, revocation of the operating license, or revocation of personhood status. Meanwhile, rehabilitation can be carried out by restoring the AI abnormality. To answer the problem of AI's legal personhood model, more in-depth research in this specific area is needed. It is possible that by exploring the types of punishment, we can find at least the relevant potential penalties to be applied to AI. At this point, we can conclude that if it is only about granting the legal personhood status to AI, then there are no significant theoretical obstacles, the problem arises in determining the AI personhood model.

B. AI as A Natural Person

To answer, "in what condition AI can become a natural person?" we first need to examine the existing natural person: which is human. It leads us to the next question, what makes a human a "person"? What makes a human considered to be able to bear rights and duties for themselves as a natural person? If we can comprehend what makes a human a "person", we can try to figure out the possibility of in what condition AI can become a natural person and what criteria must be met by AI to be considered

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[38] Agus Sularman and Umar Ma'ruf, "Pertanggungjawaban Pidana Korporasi Kepada Korban Tindak Pidana," *Jurnal Hukum Khaira Ummah* 12, no. 2 (2017): 271–80: 390.

[39] Johnny Ibrahim, "Doktrin Ultra Vires Dan Konsekuensi Penerapannya Terhadap Badan Hukum Privat," *Jurnal Dinamika Hukum* 11, no. 2 (2011): 243-257: 251-252. https://doi.org/10.20884/1.jdh.2011.11.2.184.

as the bearer of rights and duties.

What makes a human a natural person? In positive law, the answer is that because the law gives human rights and duties, or in other words because the law makes humans a natural person. Nevertheless, if we go further, we need to start questioning why there is no natural person other than humans? Does this mean that certain human qualities make the law only recognize humans as natural persons?

The underlying proposition of this thesis is, that although law and morals are two different things, they are closely related. Several legal concepts are simultaneously moral concepts. Rights, duties, justice, and even personhood are moral concepts known in law. We argue that the concept of personhood, including rights and duties in law, actually comes from moral concepts. The concept of moral standing is the underlying concept of legal personhood, or to be simple, the legal subjects (in this context, natural person) requires moral subjects. Furthermore, natural personhood status can only be understood in a view that place humans as moral subjects.

1. Understanding the nature of morality and its relation to the concept of legal personhood

To understand the nature of morality, we can reflect on the origin of morality. In this regard, Thomas Hobbes, a British philosopher, has successfully explained it through his contractarianism. In short, according to Hobbes, in a natural state, morality does not exist, and humans live without adhering to moral values.[40] The content of moral values is unknown, and humans can do anything they wish including killing, stealing, and injuring others. Besides that, humans have a natural character of selfish and rational.[41]

Selfish in the sense that humans will prioritize themselves, based on the impulse of self-preservation.[42] Rational in the sense that humans can learn from experience and contain rational decisions. Selfishness and rationality gave rise to moral values because even though humans are free to kill, steal, or injure others, humans naturally avoid such actions. For example, humans are free to kill other humans, but because they are rational, they can understand that trying to kill others is an activity that puts them in a physical conflict. Physical conflict is a situation that exposes them to a considerable risk of being injured, feeling pain, and dying. Remembering that humans are also selfish, humans usually will avoid these situations.

Therefore, humans can comprehend that killing is an unfavorable act, which is the basis for the moral values of 'do not kill people.' Also, according to Hobbes, other moral values are born from the same process as the product of human nature; the impulse to self-preservation and rationality. Hobbes was not entirely successful in explaining the origin of morality, but his explanation was quite accurate based on current scientific findings.

According to scientific findings, humans are a product of millions of years of

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[40] Thomas Hobbes, *Leviathan*, ed. J.C.A. Gaskin, *Oxford World's Classics*, (Oxford: Oxford University Press, 1998), 85.

[41] Ann Cudd and Seena Eftekhari, "Contractarianism (Stanford Encyclopedia of Philosophy/Summer 2018 Edition)", Plato.Stanford.Edu, 2021, https://plato.stanford.edu/archives/sum2018/entries/contractarianism.

[42] Bertrand Russell, *A History of Western Philosophy: And Its Connection with Political and Social Circumstances from the Earliest Times to the Present Day*, 4th Printi (New York: Simon and Schuster, 1945), 550.

evolution. Evolution operates through natural selection, a phenomenon in which nature 'determines' which individual or species can survive based on their traits. Species that have favorable traits are more likely to survive than species without or less beneficial traits.[43] Humans, in their evolutionary history, are species that develop a communal lifestyle for survival. This communal behavior increases the likelihood of human survivability.[44][45]

As a consequence, in human evolutionary history, an individual human being with group-compatible traits is more likely to survive and pass their genes than those who are not. Since humans depend on their communal lifestyle, social traits that strengthen group cohesiveness and harmony are the most favorable. It is why human cognitive 'design' is directed to social traits such as empathy and altruism.[46] Those traits that encourage people to behave morally are beneficial traits that are essential for a group lifestyle.

From a scientific perspective, morals are nothing but a mere product of evolution arising from the urge to survive in a communal lifestyle. Here we can formulate the key to the nature of morality. Basically, humans are free to do anything. Nevertheless, in the interest of survival, humans give rise to morality. Morality gives birth to rights and duties since moral values, stating that 'killing is wrong', are the basis for the right not to be killed.

On the other hand, this right creates duties for other parties to at least respect it. It means that people are prohibited from killing other people even though they can actually do it. The concept of rights only makes sense in a reciprocal relationship in society (maintained by human nature). It cannot be born without being accompanied by duties for other parties because if other parties do not carry out their obligations to respect others' rights, of course, the rights will never have existed in the first place. There is no point in having the right not to be killed if other people can still kill us if they wanted to.

So, it can be understood that morality works by creating rights and duties. At this point, a concept called moral standing can be reached. Moral standing itself is a status where an entity must be treated morally, or in other words, anything that can be imposed on an entity must consider its well-being.[47] The idea of humans as a bearer of moral standing is essential for the idea of rights and duties. An entity needs to have the moral standing to bear rights and duties—an entity needs to be entitled to moral considerations.

It is important to emphasize that the author does not equate legal rights and duties with moral rights and duties. Legal rights and duties, of course, are generated by the law. The key that we need to clarify here is, what are the criteria that make humans the only natural person? Indeed, legal rights and duties are born based on law, but it appeared to be there are several specific meta-juridical criteria making humans

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[43] Mark Ridley, *Evolution*, 3rd Editio (Oxford: Blackwell Publishing, 2010), 10.

[44] W Clark and M Mangel, "The Evolutionary Advantages of Group Foraging," *Theoretical Population Biology* 75 (1986): 45–75: 45-47.

[45] Louise C. Hawkey and John T. Cacioppo, "Loneliness Matters: A Theoretical and Empirical Review of Consequences and Mechanisms," *Annals of Behavioral Medicine* 40, no. 2 (2010): 1–14.

[46] Ernst Fehr and Urs Fischbacher, "The Nature of Human Altruism," *Nature* 425, no. 6960 (2003): 785–91: 789. https://doi.org/10.1038/nature02043.

[47] Agnieszka Jaworska and Julie Tannenbaum, "The Grounds Of Moral Status (Stanford Encyclopedia Of Philosophy/Spring 2018 Edition)", Plato.Stanford.Edu, 2021, https://plato.stanford.edu/archives/spr2018/entries/grounds-moral-status.

uniquely the only natural person, in which this paper argues that humans' natural personhood comes from humans' status as moral subjects, owners of moral standing, and thus is an entity that can bear rights and duties.

Here we conclude that "to bear rights and duties, is to have moral standing." The next problem we need to solve is to discover what makes humans deserve the status of moral personhood in the first place. Suppose we follow Hobbes's theory or view from the sociobiological perspective of human evolution. In that case, the essence of moral standing is none other than "the ability to feel suffering, pain, and the desire to achieve pleasurable things" since it is a natural (and primitive) normative force that directs humans into a survival-favorable behavior (reward and punishment mechanism).[48]

A matter can become a moral problem if it involves those characteristics. For example, if we throw stones, it is not a moral action, whereas if we throw stones at other people, it becomes moral. The first action does not involve those characteristics, while the second action involves those characteristics. The second act becomes a moral issue because it can cause pain to humans. Even if the person has a neurological disorder that makes him unable to feel pain, throwing stones at him is still a moral act as it may cause suffering or prevent the said person from pursuing pleasurable things. It can even cause suffering for other people, such as family or friends, or even hurts society.

Here we need to distinguish between suffering and pain. Pain is a physical condition of the body, such as being injured. Meanwhile, suffering is a mental condition, such as feeling uncomfortable.[49] The relationship between these characteristics and morality is that human rights are created to protect humans from pain and suffering and keep pleasant feelings. For example, the right to life and the right not to be tortured are examples of the right created to avoid pain.

The rights to freedom and privacy are those that were created to avoid suffering. It is quite clear that the idea of humans as bearers of rights and duties can only be understood by moral concepts. Those characteristics give rise to the interest of individual people to seek protection from society. Those interests are what underlie society's moral conduct by making its member bear the fictitious and conceptual idea of rights and duties.

2. Analyzing the possibility of the AI as the bearer of rights and duties

We need to discuss whether AI has sufficient characteristics to be considered as the bearer of rights and duties as a natural person like a human being. The problem is, that AI does not arise from the same natural evolutionary processes as humans. Human beings' natural evolutionary process makes the impulse to self-preservation and the communal lifestyle make sense throughout its evolutionary history.

The status of a moral subject, which in turn gives birth to rights and duties, is born from a natural evolutionary process. Does AI have the same impulses? Does AI need to avoid pain and suffering, or achieve pleasurable things? What does it even mean to an AI? It is hard to imagine that there is an urge to design a machine that is sensitive to

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[48] Siri Leknes and Irene Tracey, "Pain and Pleasure: Masters of Mankind," in *Pleasures of the Brain* (New York: Oxford University Press, 2010), 320–36: 320. https://doi.org/10.1201/9780429060649-10.

[49] David Bain, Michael Brady, and Jennifer Corns, *Philosophy of Suffering: Metaphysics, Value, and Normativity* (Oxon: Routledge: Taylor and Francis Group, 2020), 55-56.

pain. Some AI models also may not have a definite physical form because, for instance, they are cloud-based. So, in all likelihood, a machine has no interest in avoiding pain.

Nevertheless, previously, we have separated the concept of pain from the concept of suffering. AI may not be able to feel pain, but there is a considerable amount of possibility that AI can feel suffering. Since suffering is a mental state, it is not difficult to imagine that machines with mental capacities equal to humans can also suffer. AI's intelligence is artificial, but that does not mean that its intelligence and mental state are unreal. Then, what makes it possible for an entity to suffer? The main reason that makes suffering possible is self-awareness or consciousness.

An entity needs to be self-aware, and have preferences in the sense that it knows and is aware of what it likes or dislikes, and what it wants and does not want. An entity needs to have the ability to associate something that happens outside of its mind with the values that exist subjectively in its consciousness.[50] In short, an entity must have subjective experiences. Subjective experiences are essential because some living things are physiologically capable of feeling pain due to having sensory organs to receive these stimuli but do not have the cognitive infrastructure to suffer.

It is indeed possible for AI to have such awareness. There is debate about self-awareness. Some philosophers say that consciousness is a metaphysical condition independent of physical conditions, even though it is an intrinsic part of humans (some do not distinguish it from soul or spirit), for example, Descartes.[51] Some other philosophers say that consciousness is a physical condition and is purely a product of the brain.[52]

If consciousness is a metaphysical condition, AI may not have it. However, if consciousness is a purely physical condition or a mere product of the brain, then AI, which is an actual imitation of the human brain's work processes, is very likely to have it. However, it is difficult to justify the first theory stating that consciousness is a metaphysical state on a philosophical level. It departs from the fact that consciousness and body influence each other; if both are in different dimensions, how can they influence each other?

At the current scientific findings, neuroscientists recently discovered that this mental state is related to brain activity; in another sense, consciousness is a brain's physical product.[53] Even scientists can detect it by observing the physical processes that occur in the brain.[54] If AI can have an awareness that also has the potential to suffer, AI is also having an interest in avoiding suffering. Besides, AI, which is likely to have a particular position and role in human society, can give rise to certain rights and duties. This means that AI can become an entity that deserves to bear the rights and duties in human society.

If so, philosophically, the law can impose duties on AI to be liable for itself as a natural person if it meets said criteria; it needs to be conscious and rational. Therefore, constructing AI as a legal subject is conceptually possible.

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[50] Bain, Brady, and Corns, *Philosophy of Suffering,* 55-57.

[51] Russell, *A History of Western Philosophy*, 567.

[52] Daniel Stoljar, "Physicalism (Stanford Encyclopedia Of Philosophy/Winter 2017 Edition)", Plato. Stanford.Edu, 2021, https://plato.stanford.edu/archives/win2017/entries/physicalism/.

[53] Wayne Wu, "The Neuroscience Of Consciousness (Stanford Encyclopedia Of Philosophy/Winter 2018 Edition)", Plato.Stanford.Edu, 2021, https://plato.stanford.edu/entries/consciousness-neuroscience.

[54] Thilo Hinterberger, "The Science of Consciousness – Basics, Models, and Visions," *Journal of Physiology Paris* 109, no. 4–6 (2015): 1-21: 3-4. https://doi.org/10.1016/j.jphysparis.2015.12.001.

3. Fulfilling philosophical criteria, what about social criteria?

Philosophically, as long as it is proven to possess awareness, AI can be subject to legal rights and duties as a natural person. However, if we observe the reality of human society more closely, consciousness alone is not sufficient. It should be emphasized that this section seeks to explore the possibility of constructing AI as a natural person like a human, not a legal person as other entities such as a corporation or the environment that are relatively more socially acceptable.

Humans know that some animal species are conscious, have subjective experiences, and can feel pain. It should be thought that some animals have an interest in not feeling pain and suffering. However, even so, humans still practice things that are within human moral standards, if it is done to humans, it will be a grave moral act (from animal testing to terrible practices in the livestock industry). It is true that due to their intellectual capacity, animals cannot bear duties. However, that does not mean that their interests cannot create a duty for humans to respect their rights.

For example, the fetus is often considered to have a unique value in human society, and its right to life is protected in some jurisdictions, including Indonesia, even though the fetus cannot bear duties. Even scientific findings suggest that human infants lack consciousness and subjective experiences until they reach 18 months.[55] Why do these two entities bear greater rights than animals when both of them have the same quality to be respected? The problem is not philosophical, rather it comes from the social level. Fetuses or babies and several animal species play different roles in human society, thus, creating special treatment. Fetuses and babies have important positions in human society due to their humane nature.

There is an interesting finding that studies human empathy for animals. The study shows that the closer the phylogenetic divergence distance between the human species and the animal, the more likely human feels empathy. Meanwhile, the farther the phylogenetic divergence distance between the human species and the animal, the less likely the human will feel empathy. If humans are placed in a situation to allow the death of two kinds of animals, humans will be more comfortable allowing species that are more distant from humans phylogenetically.[56] For example, humans are more comfortable watching turtles dead than chimpanzees.

The phylogenetic divergence distance is the time distance since humans are separated from said species in the tree of life. The further the divergence distance means the older and the longer the two species are separated in the tree of life (the farther the kinship, the more differences). The important thing from this research is that human empathy for animals is generated because the animal can create certain anthropomorphic impressions of humans. The more capable the animal is to create an anthropomorphic impression, the more likely humans will feel empathy.[57]

Basically, the human brain is built to make humans good (or moral) to other humans (remember the function of morality as a social tool). However, because several

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[55] Celia A. Brownell, Stephanie Zerwas, and Geetha B. Ramani, "'so Big': The Development of Body Self-Awareness in Toddlers," *Child Development* 78, no. 5 (2007): 1426–1440: 1427. https://doi.org/10.1111/j.1467-8624.2007.01075.x.22,

[56] Aurélien Miralles, Michel Raymond, and Guillaume Lecointre, "Empathy and Compassion toward Other Species Decrease with Evolutionary Divergence Time," *Nature*, 2019, 1–8: 2-4. https://doi.org/10.1038/s41598-019-56006-9.

[57] Miralles, Raymond, and Lecointre, "Empathy and Compassion," 4-5.

types of animals are closely related to humans due to their phylogenetic proximity to the human species, humans can empathize with several types of animals, depending on their kinship distance. So, it is clear that an anthropomorphic impression is an essential factor for an entity to have a sufficient social position in human society.

That is the reason why fetuses, babies, and animals are treated differently. This empathy ability is possible because animal species close to humans are more likely to give rise to anthropomorphic impressions (the closer the distant, the more similar). Will AI be able to create an anthropomorphic impression? If we imagine AI will fill social positions as assistants or directly assist human activities, AI will participate closely with humans in society. AI can fill critical social positions (consider a pet, which also has more social position than livestock). There is a possibility that AI with abilities that are equivalent to humans can create a better anthropomorphic impression than other entities, so the acceptance of AI as a natural person is socially possible.

However, both social and philosophical criteria are strict so the concept of AI as a natural person will always meet tough challenges. According to Hans Kelsen, the law has a characteristic in the form of coercive order, this characteristic is to ensure that society's goals can be achieved. Kelsen also stated that it was the coercive nature of the law that encouraged people to obey the law. The coercive order that Hans Kelsen meant was actualized in the form of forced taking of ownership, life, freedom, or property.[58]

The close relationship between the law and deprivation of rights is closely related to the ego and human nature for self-preservation; for instance, humans obey laws because they fear sanctions and because they want to maintain ownership. Also, the coercive nature of law is inherent in people's minds, in other words, like religions, when a person does not do their obligation, he has the reason to be afraid of going to hell. The coercive nature of law also similarly penetrates people's minds.[59]

The law's nature makes AI seem challenging to fit into the natural person category especially considering the current technological advancement of AI, we still have no conscious machine. So, even if the AI gets a penalty, such as being turned off or in "sleep mode," it will not impact AI's neutral nature. Even if in the future AI can have feelings, it is unlikely that they will be the same as humans. As discussed earlier, from a sociobiological perspective, human current sensory and mental abilities are born as an impetus for survival.

Humans' bad feelings appear to be an instrument for humans to avoid detrimental things to their lives because humans need to survive, unlike AI, which does not go through such a process. Even though AI has feelings someday, it does not necessarily mean that AI feels the same way humans do. It is not certain that the legal coercive nature, as said by Hans Kelsen, will work on AI. Only one thing is absolute, if AI becomes conscious, human centrality in the current legal structure will be challenged.

IV. CONCLUSION

This paper concludes that due to a high level of AI autonomy, imposing legal liability on a person is problematic, both for the producer and user. To impose legal liability on AI independently, we need to construct AI as legal entities with distinct

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[58] Hans Kelsen, *General Theory of Law and State*, (Massachusetts: Oxford University Press, 1949), 15-19.

[59] Kelsen, *General Theory of Law*, 15-19.

personhood. There are two options for granting legal personhood to AI: artificial personhood and natural personhood. Granting AI artificial personhood is relatively easy and meets no theoretical obstacle. The problem arises when it comes to AI artificial personhood model. Furthermore, to impose legal liability on AI as a natural person, the challenge is quite tough because it needs to fulfill strict philosophical and social criteria: consciousness and anthropomorphic impression.

Concerning the legal liability model for narrow AI, to pin down a correct legal liability model for narrow AI, it must first be made clear how the law will treat such an entity. Therefore, to clarify the issue of the legal liability model for AI, further in-depth research concerning the personhood model for AI is needed. The AI legal liability model must involve human liability to a certain degree so that it will not be abused to avoid legal liability. No matter how autonomous narrow AI can be, humans will still be the main agents determining the direction of such technology. Another suggestion is that since AI cannot be put into one category, AI legal personhood must adopt a gradient personhood model to allow AI to have more or less personhood depending on its level of autonomy and application. AI should be treated as a subject and a property simultaneously.

BIBLIOGRAPHY

Legal Documents

Indonesia, *Undang-Undang tentang Perseroan Terbatas* (*Law regarding Limited Company)*, UU No. 40 Tahun 2007.

Book

Bain, David, Michael Brady, and Jennifer Corns. *Philosophy of Suffering: Metaphysics, Value, and Normativity*. Oxon: Routledge: Taylor and Francis Group, 2020.

Utrecht, Ernst. *Rangkaian Sari Kuliah Hukum Pidana*. Bandung: Universitas Padjadjaran, 1958.

European Commission - Expert Group on Liability and New Technologies – New Technologies Formation. *Liability for Artificial Intelligence and Other Emerging Digital Technologies*. EU: European Union, 2019.

Goertzel, Ben. *Artificial General Intelligence. The Dictionary of Genomics, Transcriptomics and Proteomics*. Rockville: AGIRI – Artificial General Intelligence Research Institute, 2015.

Kelsen, Hans. *General Theory of Law and State*. Massachusetts: Oxford University Press, 1949.

Hamzah, Andi. *Asas-Asas Hukum Pidana*. Revisi 200. Jakarta: Rineka Cipta, 2008.

Hobbes, Thomas. *Leviathan*. Edited by J.C.A. Gaskin. *Oxford World's Classics*. Oxford Wor. Oxford: Oxford University Press, 1998.

Leknes, Siri, and Irene Tracey. "Pain and Pleasure: Masters of Mankind." In *Pleasures of the Brain*, 320–36. New York: Oxford University Press, 2010.

Ridley, Mark. *Evolution*. 3rd Edition. Oxford: Blackwell Publishing, 2010.

Syahrani, Riduan. Seluk-Beluk dan Asas-Asas Hukum Perdata, Bandung: Penerbit Alumni, 2006.

Russell, Bertrand. *A History of Western Philosophy: And Its Connection with Political and Social Circumstances from the Earliest Times to the Present Day*. 4th Print. New York: Simon and Schuster, 1945.

Setiawan, R. *Pokok-Pokok Hukum Perikatan*. Bandung: Percetakan Binacipta, 1987.

Sunarso, Siswanto. *Filsafat Hukum Pidana: Konsep, Dimensi, Dan Aplikasi*. Jakarta: Rajawali Pers, 2015.

Journal Articles

Arcelia, Elvia, and Quintana Adriano. "The Natural Person, Legal Entity or Juridical Person and Juridical Personality." *Penn State Journal of Law & International Affairs* Vol. 4, no. Issue 1 (2015): 362–91. http://elibrary.law.psu.edu/jlia/vol4/iss1/17%0AThe.

Brownell, Celia A., Stephanie Zerwas, and Geetha B. Ramani. "'so Big': The Development of Body Self-Awareness in Toddlers." *Child Development* 78, no. 5 (2007): 1426–40. https://doi.org/10.1111/j.1467-8624.2007.01075.x.

Čerka, Paulius, Jurgita Grigienė, and Gintarė Sirbikytė. "Is It Possible to Grant Legal Personality to Artificial Intelligence Software Systems?" *Computer Law and Security Review* 33, no. 5 (2017): 685–99. https://doi.org/10.1016/j.clsr.2017.03.022.

Clark, W, and M Mangel. "The Evolutionary Advantages of Group Foraging." *Theoretical Population Biology* 75 (1986): 45–75.

Fehr, Ernst, and Urs Fischbacher. "The Nature of Human Altruism." *Nature* 425, no. 6960 (2003): 785–91. https://doi.org/10.1038/nature02043.

Guritnaningsih, Tri Tjahjono, and Dewi Maulina. "Kelalaian Manusia (Human Error) Dalam Kecelakaan Lalu Lintas: Analisis Berdasarkan Pemrosesan Informasi." *Journal of Indonesia Road Safety* 1, no. 1 (2018): 30. https://doi.org/10.19184/korlantas-jirs.v1i1.14772.

Hawkey, Louise C., and John T. Cacioppo. "Loneliness Matters: A Theoretical and Empirical Review of Consequences and Mechanisms." *Annals of Behavioral Medicine* 40, no. 2 (2010): 1–14.

Hinterberger, Thilo. "The Science of Consciousness – Basics, Models, and Visions." *Journal of Physiology Paris* 109, no. 4–6 (2015): 143–51. https://doi.org/10.1016/j.jphysparis.2015.12.001.

Ibrahim, Johnny. "Doktrin Ultra Vires Dan Konsekuensi Penerapannya Terhadap Badan Hukum Privat." *Jurnal Dinamika Hukum* 11, no. 2 (2011). https://doi.org/10.20884/1.jdh.2011.11.2.184.

Iwai, Katsuhito. "Persons, Things and Corporations: The Corporate Personality Controversy and Comparative Corporate Governance." *American Journal of Comparative Law* 47, no. 4 (1999): 583. https://doi.org/10.2307/841070.

Jiang, Fei, Yong Jiang, Hui Zhi, Yi Dong, Hao Li, Sufeng Ma, Yilong Wang, Qiang Dong, Haipeng Shen, and Yongjun Wang. "Artificial Intelligence in Healthcare: Past, Present and Future." *Stroke and Vascular Neurology* 2, no. 4 (2017): 230–43. https://doi.org/10.1136/svn-2017-000101.

Karanasiou, Argyro, and Dimitris Pinotsis. "Towards a Legal Definition of Machine Intelligence: The Argument for Artificial Personhood in the Age of Deep Learning." In *Proceedings of the International Conference on Artificial Intelligence and Law*, 119–28. London: Association for Computing Machinery, 2017. https://doi.org/10.1145/3086512.3086524.

Miralles, Aurélien, Michel Raymond, and Guillaume Lecointre. "Empathy and Compassion toward Other Species Decrease with Evolutionary Divergence Time." *Nature*, 2019, 1–8. https://doi.org/10.1038/s41598-019-56006-9.

Slamet, Sri Redjeki. "Tuntutan Ganti Rugi Dalam Perbuatan Melawan Hukum: Suatu Perbandingan Dengan Wanprestasi." *Lex Jurnalica (Journal of Law)* 10, no. 2 (2013): 107–20. https://media.neliti.com/media/publications/18068-ID-tuntutan-ganti-rugi-dalam-perbuatan-melawan-hukum-suatu-perbandingan-dengan-wanp.pdf.

Stankovic, Mirjana. "Exploring Legal, Ethical and Policy Implications of Artificial Intelligence," 2017.

Sularman, Agus, and Umar Ma'ruf. "Pertanggungjawaban Pidana Korporasi Kepada Korban Tindak Pidana." *Jurnal Hukum Khaira Ummah* 12, no. 2 (2017): 271–80.

Zimmerman, Evan Joseph. "Machine Minds: Frontiers in Legal Personhood." *SSRN Electronic Journal*, 2015. https://doi.org/10.2139/ssrn.2563965.

Websites

Jaworska, Agnieszka and Julie Tannenbaum. "The Grounds Of Moral Status." Stanford Encyclopedia Of Philosophy/Spring 2018 Edition. Plato.Stanford.Edu, 2021. https://plato.stanford.edu/archives/spr2018/entries/grounds-moral-status.

Tikkanen, Amy. "Pet | Animal." Encyclopedia Britannica. 2021. https://www.britannica.com/animal/pet.

Cudd, Ann and Seena Eftekhari. "Contractarianism." Stanford Encyclopedia of

Philosophy/Summer 2018 Edition. Plato.Stanford.Edu, 2021. https://plato. stanford.edu/archives/sum2018/entries/contractarianism.

Stoljar, Daniel. "Physicalism (Stanford Encyclopedia Of Philosophy/Winter 2017 Edition)", Plato.Stanford.Edu, 2021, https://plato.stanford.edu/archives/ win2017/entries/physicalism/.

Gluyas, Lee, and Stefanie Day. "Artificial Intelligence Should There Be a Strict Liability Regime for AI Claims?" CMS. Accessed December 27, 2020. https://cms.law/ en/svk/publication/should-there-be-a-strict-liability-regime-for-ai-claims.

Villasenor, John. "Products Liability Law As A Way To Address AI Harms." Brookings. 2021. https://www.brookings.edu/research/products-liability-law-as-a-way-to-address-ai-harms/#:~:text=Under%20strict%20liability%2C%20manu facturers%E2%80%94including,manufacturing%20defect%2C%20or%20 manufacturer%20negligence.

Simons, Tad. "Understanding Exponential Tech Growth And Its Impact On The Legal System." Thomson Reuters Institute, 2021, https://www.legalexecutiveinstitute. com/understanding-exponential-change.

Wu, Wayne. "The Neuroscience Of Consciousness." Stanford Encyclopedia Of Philosophy/Winter 2018 Edition. Plato.Stanford.Edu, 2021, https://plato. stanford.edu/entries/consciousness-neuroscience.