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RESEARCH ON THE LEGAL SUBJECT THEORY AND HOHFELD'S ONTOLOGY OF ARTIFICIAL INTELLIGENCE

DEEPTHI RODDA

Abstract

The topic of jurisprudence needs to change to become a jurisprudence of the subject, one that recognises that questions about the nature of law also need to take into consideration the ideological, sociological, and psychological dimensions of our perceptions of the legal system. Since culture is what gives rise to legal subjects as subjects, a subject's jurisprudence is first and foremost a cultural jurisprudence. Hence, by highlighting the contribution that the legal subject makes to the legal object, the argument does not contend that aspects of the legal system, such as coherence or determinacy, are subjective in the traditional sense of the word—rather, that these aspects are only perceptual choices made by the beholder. In the modern period, artificial intelligence is a relatively new concept, and there is much discussion in academic circles about whether or not it can be used to the legal domain. The doctrines supporting to justify legal subject is strengthened and improved. In the hopes that others might find it helpful, a researcher gives their personal perspectives on the legal implications of artificial intelligence. Enhance the study of artificial intelligence's legal subject theory from the standpoint of rights. This paper summarizes and analyzes the current research status of the artificial intelligence legal subject theory, and puts forward its dilemmas based on each theory to further analyze the artificial intelligence legal subject theory. This article gives the current status of the doctrine that reflect on the dilemmas existing, further elaborates on the views, and proposes a view on artificial intelligence. Examine the perspectives on artificial intelligence to further investigate and expand the evolution of the legal subject theory of AI. Metaphysics concerning the nature and relations of being abstract in existence is to be researched for attribution of legal subjectivity with support from elaborating on the significance of Hohfeld's formal theory of legal relations to the importance of the development of deontological logic believing that Hohfeld's terms are ostensibly natural languages, and they are selected from American Legal terms and concepts commonly used in judicial adjudication literature, but strictly speaking, it has transcended natural language and risen to an artificial symbol system as a set of legal symbolic logic.

Key words: *Artificial Intelligence, Legal Subjects, Legal Doctrine, Deontological Logic, Ontology.*

1. Introduction

Science and technology advance the discipline of law, and law advances science and technology. In the present day, The field of artificial intelligence is a recent development with its own legal subject status. Even now, legal academics has extensively addressed the topic of legal status. Various scholars have arrived at differing findings from their investigations into

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Dr. Deepthi Rodda, Research Assistant, Damodaram Sanjivayya National Law University Sabbavaram, Vishakapatnam.

the legal applicability of artificial intelligence. From the perspective of our own research, we look at the issue of artificial intelligence legal subjects, but limited by the limitations of the perspective, there will be some difficulties and research problems from its perspective. Ontologies have been developing recently, and they are now being developed on domain experts' workstations rather than in AI labs.

On the World Wide Web, ontologies are now frequently used to classify features and products for sale. The language used to encode information on Web sites so that electronic agents looking for information can understand it and use it to facilitate Web agent interaction. Standardized ontologies are now developed by many disciplines, which domain experts can utilize to exchange and annotate material related to their professions. An ontology defines a consistent terminology for academics who need to share knowledge within an area. It contains definitions of the domain's fundamental concepts and their relationships that are machine-interpretable. Ontologies have been developing recently, and they are now being developed on domain experts' workstations rather than in AI labs. On the World Wide Web, ontologies are now frequently used to classify features and products for sale. The language used to encode information on Web sites so that electronic agents looking for information can understand it and use it to facilitate Web agent interaction. Standardized ontologies are now developed by many disciplines, which domain experts can utilize to exchange and annotate material related to their professions. An ontology defines a common language for academics who must exchange knowledge within a domain. It contains definitions of the domain's fundamental concepts and their relationships that are machine-interpretable.

Ontology is necessary for a variety of reasons, including the exchange of common software agent understanding, the ability to reuse domain knowledge, and the explicit analysis and separation of domain assumptions. Ontology is necessary for a variety of reasons, including the exchange of common software agent understanding, the ability to reuse domain knowledge, and the explicit analysis and separation of domain assumptions. Satisfying the Gruber standard, Hohfeld’s concept matrix necessarily serves as an ontology for legal artificial intelligence. Hohfeld language is an important attempt. As a revolutionary symbol system, Hohfeld’s terminology will reshape legislative technique in future.

2. Current Status of Doctrine

Although the development of artificial intelligence in most countries is relatively late, it has reached a stage of rapid development and is the focus of research in the legal field. There are three different perspectives on whether artificial intelligence can be covered by the law. Furthermore, because countries in Europe and America have been working on artificial intelligence for a considerable amount of time. Therefore, this article will also elaborate on the current status of some important foreign theories.

2.1. Categorical Say

Some academics think that topics related to law should incorporate artificial intelligence. These academics espouse a notion known as "affirmative theory." The following factors are the key ways in which one might answer "absolutely yes."

2.1.1. Rights Subject Theory

Artificial intelligence robots have been widely used in society and have gradually demonstrated their autonomy and socialization advantages. Robots should enjoy rights, as in the development process of subjects of rights, subjects such as slaves, women, black people, legal persons and

animals have obtained the status of rights subjects or their rights have been expanded. All reflect the important impact of changes in the "strength" of the group on legal rights. The acquisition of the subject status of robot rights is in line with "strength-defined rights" theory. As a result, when the use of robots in society becomes inevitable, our nation should aggressively embrace the social development trends of the artificial intelligence era, recognise the legal subject status of robots, and grant machines the required human rights.[1]

Legislation is thought to need to set aside a specific amount of space for the advancement of science and technology in the future. Laws need to be progressive. The field of artificial intelligence is expanding quickly, and it is imperative that its legal standing be acknowledged. Legal proceedings pertaining to artificial intelligence must be conducted in order to lay the foundation for directing the field's future advancement and resolving its challenges.

2.1.2. Fictional Subject Theory

Artificial intelligence possesses human thinking ability and therefore transcends the category of "things" in the traditional sense. However, artificial intelligence cannot escape the need to be human. Its place in society is difficult to ascertain because of its crucial supporting role in quasi-services. Artificial intelligence's legal subject status is supported by "the notion of creation." The modern legal person system has developed through the creation of personality. Artificial intelligence can use this as a path to use legal fiction technology to give it legal subject status. According to academics, the "application" path, limited liability, and unequal relationship between humans and artificial intelligence establish the legal subject status of AI and its use of legal fiction tactics.[2]

2.1.3. From a Philosophical Perspective

The ontology of artificial intelligence is thought to have the makings of a legal topic. Artificial intelligence may exist as a new life form and legal subject, as suggested by the object's previous experience as a normative subject. With the advent of quantum computing, the advancement of algorithms, and the rapid growth of data, under the rapid development trend, artificial intelligence is moving towards general use. Whether in terms of subjective abilities or behavioural appearance, artificial intelligence is getting closer to people are also more able to be accepted by human beings, thus being deeply embedded in human social relations and becoming relational subjects.[3] Legal philosophy's perspective offers two arguments in favour of people who hold this position: first, that artificial intelligence's subject status aligns with the universal logic of legal philosophy, and second, that civil law philosophy can use its subject status to provide legal technical support.

2.2. Negation Theory

According to some academics, artificial intelligence is not a subject that belongs in the legal domain. The doctrinal views represented by such scholars are called "Negative theory". This is also a view recognized by most scholars in our country. According to these academics,

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[1] Wen, Z. and Tong, D. *Analysis of the Legal Subject Status of Artificial Intelligence,14, Beijing Law Review*, 74-86 (2023), https://www.scirp.org/journal/paperinformation?paperid=122946.

[2] Technical University Berlin, *Artificial intelligence in fiction: between narratives and metaphors*, AI & Society (2021), https://doi.org/10.1007/s00146-021-01299-6.

[3] Buchanan, B. G. A (Very) Brief History of Artificial Intelligence. AI Magazine 2005, 26, 53–60. https://doi.org/10.1609/aimag.v26i4.1848.

artificial intelligence lacks the necessary conditions to be considered a legal subject. mostly from the perspectives listed here.

2.2.1. Tool Theory

After all, intelligent robots are also machines, and their attributes are still human tools and people will become suspicious when facing high-end intelligent robots. However, some scholars believe that such robots are still tools, not humans. They completely deny the human attributes of robots and believe that they do not have legal personality. According to academics, artificial intelligence can only assist people in certain elements of upholding the law; it cannot, in and of itself, replace humans as the primary agents of the rule of law. merely because it is a machine created by humans and not a person.[4] Also it is believed that it is not easy for artificial intelligence to break through technical obstacles. Artificial intelligence is considered to be a precise algorithm edited by humans, so it is recommended to classify artificial intelligence into the category of objects.

2.2.2. Control Theory

The majority of academics think that artificial intelligence lacks the will that distinguishes a legal person. “Personality” is the legal subject qualification. In modern legal systems, “personality” generally refers to rational ability, the core elements of which include self-awareness and free will. The ability of free will is not only one of the core elements of a civil legal subject, but also one of the necessary conditions for a criminal legal liability subject. Artificial intelligence does not and should not have free consciousness because although machines are technically capable of thinking like humans, when it comes to social issues, it cannot be handled with human emotion. And artificial intelligence with free consciousness is not conducive to human reproduction and development. Scholars point out that in determining the qualifications of legal subjects, there are only ‘yes’ and ‘no’, and there is no intermediate state. He argues that there are no laws governing AI, and that the subject's factual and normative circumstances are that it lacks the capacity and will to fulfil responsibilities and enjoy rights.[5] Artificial intelligence cannot directly possess legal subject qualifications since it lacks human self-awareness and willpower. Since artificial intelligence is still a technology that is controlled by humans, it shouldn't be brought up in court.[6]

2.2.3. Theory of Special Objects

Seeking the positioning of artificial intelligence in the object system can take into account the dichotomy of subject and object. On the legal needs of robot legal regulation, incorporate robots into the category of special objects, classify them according to their uses, and classify them according to their degree of intelligence. Divided into different levels of objects, artificial

[4] Schiaffonati, V. A Framework for the Foundation of the Philosophy of Artificial Intelligence. Minds and Machines 2003, 13 (4), 537–552. https://doi.org/10.1023/A:1026252817929

[5] Claudio Novelli, Giorgio Bongiovanni & Giovanni Sartor, A conceptual framework for legal personality and its application to AI, Jurisprudence, 13:2, 194-219, (2022), doi: 10.1080/20403313.2021.2010936

[6] Anderson, Michael and Susan Leigh Anderson, “Machine Ethics: Creating an Ethical Intelligent Agent”, AI Magazine, 28(4): 15–26, 2007.

intelligence will be subject to special legal regulations only when it meets the conditions of special objects.[7]

2.2.4. From the perspective of legal philosophy

Human mind is a complex of reason, emotion, and desire, and its operation has a complex mechanism this mechanism is not available and cannot be simulated by artificial intelligence. Furthermore, artificial intelligence lacks the essence and qualities of legal subjects because it lacks the ideals and pragmatism of humans as subjects. From a philosophical standpoint, there are two primary arguments against artificial intelligence's legal subject status. One is that the universal logic of legal philosophy is consistent with the subject status of artificial intelligence. Scholars who deny it mainly focus on the ontological element of human ethics in Western philosophy. To refute, the other is on the grounds of "affirmative theory". The existing negative theory scholars study and make objection arguments against civil law philosophy.[8]

2.3. Compromise theory

The compromise theory is also called the restricted affirmative theory. Scholars who believe in this view regard artificial intelligence as a substance between subject and object, having the following perspectives.

2.3.1. Theory of limited legal personality

Artificial intelligence can be classified into three categories: weak, strong, and super artificial intelligence. These categories are determined by whether the artificial intelligence possesses "intelligent traits" and "autonomous consciousness." Weak artificial intelligence is regarded to be object-specific and to have no consciousness, being just of ordinary instrumental value. It is considered by many scholars as an extension and expansion of life tools and does not have independence.[9]

Strong artificial intelligence has been given legal subject status in limited circumstances. This kind of artificial intelligence can only be functional and autonomous in property-related legal relationships. Its autonomy is limited and its independent purpose is weak. But those involving personal rights and interests in legal relations, this type of artificial intelligence is unable to independently handle legal relations as a legal subject due to imperfect consciousness. And super artificial intelligence should be a legal subject status because it has a substantial sense of independence.[10]

2.3.2. Other theories

In order to address the current situation, advance the theory of personal equality, and directly address the question of the legal subject status of AI from the standpoint of legal personality,

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[7] Stephane Mortier, The Dichotomy of Uses of Artificial Intelligence In National Security, Scientific Magazine of the University Centre of the Guardia Civil 1, June ,2023 , https://revistacugc.es/article/download/5803/6411

[8] hou, Z., *Emotional thinking as the foundation of consciousness in artificial intelligence, Cultures of Science*, *4*(3), 112-123, 2021, https://doi.org/10.1177/20966083211052651

[9] Schiaffonati, V. *A Framework for the Foundation of the Philosophy of Artificial Intelligence,* Minds and Machines, 13 (4), 537–552,2023, https://doi.org/10.1023/A:1026252817929.

[10] Li, Jian, Cai, Xintong and Cheng, Le. *Legal regulation of generative AI: a multidimensional construction, International Journal of Legal Discourse*, vol. 8, no. 2, pp. 365-388, 2023, https://doi.org/10.1515/ijld-2023-2017.

scholars also analyse the legal subject status of artificial intelligence from a variety of angles. From the system of "subtraction of persons" to the system of "addition of persons", we can use the system of "addition of persons" to explain the modern legal person system. The subject status it possesses can be understood as being obtained through the addition of persons to possessing a certain legal personality.[11] Similarly, artificial intelligence can also be in a order to construct the same legal personality as a legal person through "personality addition".

2.4. Current Situation Overseas

2.4.1. Electronic Agent Theory

It first appeared in the Uniform Electronic Transactions Act promulgated in the United States in 1999. As an agent of human beings, electronic agents have a relationship with human beings. The relationship is between the agent and the agent, and the electronic agent has the characteristics of independence and independence from human control.[12] To put it bluntly, the relationship between artificial intelligence, the owner and user is a legal agency relationship, and the agent is responsible for the actions of the principal. According to Section 14 of the U.S. Uniform Electronic Transactions Act, provides that a contract may be formed by electronic agents of the parties even if no one has knowledge or review of the electronic agent,[13]human conduct or the terms or agreements arising therefrom.

2.4.2. Electronic Personality Theory

The European Commission's Legal Affairs Committee filed a resolution on May 31, 2016, asking the commission to designate automated intelligent computers as "electronic persons." Later, the European Union voted to adopt the "European Union Robot Civil Liability Legal Rules" for artificial intelligence with the ability to have certain autonomy and act as an agent for natural persons or enterprises to carry out agency activities for the benefit of the principal; subsequently, the EU passed the "EU Robot Civil Law Draft" further expands the scope of "personality" of artificial intelligence. Based on its electronic properties, it is recommended to give it "electronic subhuman" status.[14] Foreign scholars have also discussed the legal subject matter of artificial intelligence, and most scholars tend to give artificial intelligence legal status of object status. Intelligent robots, no matter how sophisticated in their technical design, will always be creations of humans. Artificial intelligence does not possess the legal standing to be governed by laws.

2.4.3. Electronic Slave Theory

This doctrine holds that intelligent robots are electronic slaves to which the slave laws of *jus civile* apply. In Roman law, slaves had no rights or duties; In Roman law, freemen were persons

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[11] Chesterman, S. *Artificial Intelligence and The Limits of Le*gal *Personality.* International & Comparative Law Quarterly, 69(4), 819-844(2020). doi:10.1017/S0020589320000366

[12] Matthew Oliver Contracting by Artificial Intelligence: Open Offers, Unilateral Mistakes, and Why Algorithms Are Not Agents, Australian National University Journal of Law and Technology, Vol 2(1), (2021)

[13] Uniform Electronic Transactions Act (1999), Sec.14, Acts of US.

[14] Maia Alexandre, Filipe, *The Legal Status of Artificially Intelligent Robots: Personhood*, Taxation and Control (June 1, 2017). Available at,
SSRN: https://ssrn.com/abstract=2985466 or http://dx.doi.org/10.2139/ssrn.2985466

with personality, while slaves had no personality and were only slaves in law. Intelligent robots are this kind of electronic slaves.[15]

3. Reflect on the dilemma of doctrinal perspectives

3.1. The dilemma of affirmative view

The technical background of affirmation is based on the period of rapid development of science and technology. A series of autonomous performances of artificial intelligence have amazed the world and also made people wonder. During this period, the doctrinal viewpoints of affirmation were enriched and developed. It must be said that there are many perspectives and theories, but in the final analysis they all express artificial intelligence as a legal person.

Within the necessity of a legal subject, and its independence or certain sense of autonomy, firstly, the important basis of the "right subject theory" is that "strength defines the "benefit", but it is not the only factor in the change of rights. The factors of historical environment, social culture also affect the change of rights. The subject is limited to the field of natural persons, and there is no strong basis for the application of changes in rights in the field of non-natural persons such as artificial intelligence.

Secondly, pretend to the will of the fictional subject expressed by the 'subject theory of control' is still subject to the will of natural persons, and the subject of its rights is limited by the will of natural persons.

In conclusion, a philosophical analysis reveals that artificial intelligence possesses a certain level of independence and intimate societal significance. Scholars develop historical research from 'ontology' and specifically it has a theoretical basis, but lacks consideration of practical and historical factors.

3.2. Dilemma of the Negative View

The technical background of the negation theory is that it was first produced in a period when technology was relatively backward, and second, it was produced in a new era of progress in human spiritual civilization. The views of the denial theory are complex and diverse. To begin with, the "tool theory" ignores the unique characteristics of artificial intelligence. Second, the "control theory" itself denies artificial intelligence's legal subject status by using analogy explanations that are unable to satisfy the demands of modern development. It should be based on actual cases, practice and situation responding to legal challenges from artificial intelligence. Once again, the 'special object theory' only briefly explains the principle and does not communicate with actual people.

The boundaries of combining the application of artificial intelligence and meeting the conditions of special objects are blurred. Lastly, rejecting artificial intelligence's legal subject status from a philosophical standpoint. The first reason is the lack of guidance from Marxist philosophical methodology, resulting in insufficient argumentation. The second reason ignores the importance of civil law philosophy. The theory of reality and the theory of purpose are also

[15] Nanos, Andreas, *Roman Slavery Law: A Competent Answer of how to Deal with Strong Artificial Intelligence? Review of Robot Rights with View of Czech and German Constitutional Law and Law History* Charles University in Prague Faculty of Law Research Paper No. 2020/III/3 (November 5, 2020), Available at SSRN: https://ssrn.com/abstract=3726000 or http://dx.doi.org/10.2139/ssrn.3726000

the basis for the subject status of legal persons, as well as the flaws of the theory of fiction itself.[16]

3.3. The Dilemma of the Eclectic View

The eclectic view emerged from the new era of high-tech development. The explanation of his views is relatively clear and concise. First, it is hoped—but not guaranteed—that a certain amount of rights restriction can strike a compromise between artificial intelligence and human legal subject status. This is known as the "limited legal personality theory." It also does not resolve the contradiction between anthropocentrism and artificial intelligence personality. Finally, other scholars explore different perspectives at the same time as there is also a lack of realistic basis, focusing on one's own understanding and abstract analysis of artificial intelligence itself, but ignoring the practical examination of artificial intelligence. For this series of practical activities, philosophical analysis and subject understanding analysis alone are far from enough. Emerging things require more practical investigation then only we can draw the correct conclusion.[17]

3.4. Dilemma of Foreign Perspectives

Regarding foreign views, first of all, although the "electronic agency theory" is an agency relationship and is used in practice, the operation is complicated and there are lack of terms and conditions. Second, the "electronic personality concept" makes clear that artificial intelligence needs legal status even while relationships between pertinent agencies are shaped by natural beings. Legal issues for the acquisition of artificial intelligence must be recognised by natural persons. Natural persons restrict artificial intelligence laws.[18]

Personality acquisition reflects, to a certain extent, the will of the natural person. Finally, the applicable conditions of the "electronic slave theory" are relatively strict and the applicable meaning is insufficient. For foreign research, we can carry out selective legal transplantation, but it must be done taking into account global actual conditions. They can blindly refer to foreign laws and policies, but selectively understand and adopt one's own country's system.

4. Explanation of Opinions

To sum up, from the perspective of affirmation, scholars attach importance to their own understanding and abstract analysis of artificial intelligence itself, but ignore the human analysis and judgment of practical inspections of artificial intelligence, such as how science and technology are developing, and whether obstacles and bottlenecks in science and technology can be broken through or how it can be used in practice. For this series of practical activities, it is far from enough to rely solely on philosophical analysis and disciplinary understanding. Emerging things require more practical investigation before we can draw correct conclusions. Although various forms of artificial intelligence might be interpreted in different ways, the compromise hypothesis does not believe that super artificial intelligence should exist. Even if technology is developing quickly and might eventually reach that point, artificial intelligence development should have a strong ethical connection to humans.

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[16] Heidegger, Jonas, and Slime Mold Masahiro Morioka, *Artificial Intelligence, Robots, and Philosophy, Journal of Philosophy of Life* Artificial Intelligence and Contemporary Philosophy 29-43, (2023)

[17] *Id*.at 11.

[18] *Id*. at 1.

From a theoretical perspective, the birth of super artificial intelligence will have a huge impact on human survival. This is not the original intention of human beings to create artificial intelligence. Super artificial intelligence may bring about the subversion of the entire human legal system, thus creating a new legal system. But no matter from the perspective of apology in civil law, super artificial intelligence cannot bring human spiritual comfort or equal empathy in terms of apology or the execution of penalties in criminal law.

The negative theory, which holds that artificial intelligence shouldn't fall under the purview of legal topics, is the widely held opinion. The current negative view is that artificial intelligence does not have free will or believes that artificial intelligence has obstacles in technological breakthroughs. These views are discussed from the scientific and technological level and the practical level.

Artificial intelligence cannot serve as a subject, indeed cannot exist as a subject in these aspects. However, there are other factors as well that prevent artificial intelligence from being covered by the law. More importantly, artificial intelligence as a subject has great influence on human life.

When carrying out selective legal transplantation, that should not blindly copy foreign laws and policies, but selectively understand and adopt the system of our own country. Looking at such issues from the perspective of human survival and development, it is believed that artificial intelligence should not be included in the scope of legal subjects. When artificial intelligence behaves like a subject, a human or another artificial intelligence will be the matching object. This may not only cause the existing legal system to collapse, and at the same time more likely to fail to achieve the purpose of legislation. For example, criminal law legislation is to prevent crime and combat crime, so criminals will be treated with penalties or the most severe punishment measures to regulate the occurrence of crimes and comfort victims and their families. But if the target of punishment is artificial intelligence, not only does it fail to regulate crime for other artificial intelligences, but it also does not provide adequate compensation for the spiritual world of the victims.

If a penalty is imposed on this AI, it will not cause any consequences to other AIs influence and cannot achieve the effect of legislation. At the same time, if humans are harmed by artificial intelligence, what we need to consider is what measures the artificial intelligence will take. Only with such punitive measures can the victims and their families feel that justice has been served, and the crime must be punished. Even although artificial intelligence is deemed a legal topic in today's culture and is susceptible to severe legal repercussions, the victim may not receive compensation, regardless of the severity of the punishment.

In the modern period, when examining problems related to artificial intelligence, we ought to begin with the viewpoint of the human race. According to the inquiry, if artificial intelligence is considered a legal topic, how should real-world cases be handled given the limited number of instances involving the technology now in existence? Humans can only accept recognition at that point. In the future, there may be obstacles to human survival if artificial intelligence is exploited as a legal topic. I believe that artificial intelligence should not fall under the purview of law; instead, the legislation should be founded on humans and human welfare.

Legal ontology of artificial intelligence: from notion to representation

In 1913, Hohfeld published the article "Basic Legal Concepts Used in Judicial Reasoning" and discovered the lowest common denominator of the legal concept and established a formal theory of legal relations. A hundred years later, its value and vitality have become even more highlight. Hohfeld's concept matrix conforms to Gruber's criterion, it must become the ontology in the field of legal artificial intelligence. Hohfeld language is an important attempt in Hohfeld's terminology the system will influence future legislative technology and become a very revolutionary symbol system.[19]

Philosophy is the source of the artificial intelligence field's understanding of ontology. The word ontology comes from the Greek 'onto', means to exist in and 'logia' means record. In philosophy, ontology is the study of the origin of the world, as opposed to epistemology.[20] The concept of ontology used in computer science, has a completely different meaning. It refers to the symbol system used by computers to process a certain field of the objective world. The system of symbols used by computers to process legal reasoning is the legal ontology in the field of computer technology. Borrowing the concept of ontology from philosophy is a terminological shift which can be termed as trans-terminology phenomenon. Ontology is literally translated, indeed difficult to show its changed meaning. Scholars suggest that the word ontology used in the field of artificial intelligence be translated into 'system of logically operable concepts',[21] although the meaning is accurate, but it's cumbersome. Some scholars also suggest that it should be translated as 'knowledge ontology', in fact, it is not a bad idea to translate it as 'symbol ontology'.

At present, the most authoritative definition of ontology is that of Tom Gruber, an artificial intelligence expert at Stanford University. The professor proposed it in his 1993 paper 'Towards Design Principles for a Knowledge Sharing Ontology'.[22]His definition is: An explicit specification of a conceptualization of a common conceptual model is called an ontology.[23] This definition contains four meanings: conceptualization, formalization, clarity and sharing, and defines ontology from the aspect of knowledge representation. In short, the ontology of artificial intelligence is a formal representation system of knowledge based on conceptualization. Conceptualization is an abstract and concise understanding of the world. It is the crystallization of human understanding. Any discipline is a collection of concepts. This is what human readable text, however, cannot be recognized by computers.

To put it figuratively, the textbook "General Principles of criminal Law", if the book is given to a computer, it will not be able to learn the conceptual system in general theory of law, because the concepts need to be formalized and symbolized, but can become the language of computers. This is the so-called 'from concept to symbol' process. If the knowledge concepts in a certain field can be systemized in a public forum in a declarative formalism means that this formal system is called the universe of discourse in semiotics. There are a number of

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[19] David John Hislop , The Hohfeldian System of Fundamental Legal Conceptions, Vol. 53, No. 1 , pp. 53-89 (1967)

[20] Worth, P. And Doresic, D. Debra, *On The Unsupervised Learning of Concept Hierarchies from (Literary) Text. International Journal of Intelligence Science*, **13**, 81-130, (2023). doi: 10.4236/ijis.2023.134006.

[21] Patrick Hohenecker and Thomas Lukasiewicz, "Ontology Reasoning with Deep Neural Networks," (2018). https://arxiv.org/abs/1808.07980 (last visited Oct. 6, 2023).

[22] Thomas R. Gruber, *Toward Principles for the Design of Ontologies Used for Knowledge Sharing*, 43 International Journal Human-Computer Studies 907 – 928 (1993).

[23] Tom Gruber, *Ontology*, Encyclopaedia of Database Systems (2009).

representational terms in the discourse universe. Term symbols in the universe of discourse are associated with human-readable text, correspondence, formal representation of a human-readable conceptual system, and through a series of formal axioms, such as the moral logic in the legal field is transformed into a computer-recognizable and computable symbol system. This is the ontology of artificial intelligence that is artificially designed.

The criteria for good design system is proposed by Gruber having a series of standards, such as clarity, consistency or coherence, scalability or extendibility, minimized decoding deviation or minimal encoding bias, etc.[24]Judging from the above criteria, Hohfeld's terminological symbol system is very consistent with Gruber's standard, and Hohfeld's conceptual system is the most easy to symbolize and mathematicalize, and has even been transformed into 'algebraic' form[25] and "relational algebra" form[26],towards mathematical logic. At present, Hohfeld's legal concept matrix has become the ontology in the field of legal artificial intelligence.

5. Conclusion

Divergent views exist on the admissibility of artificial intelligence as a matter of law. Affirmative theory, negative theory, and compromise theory are all expressed in their respective fields. However, there are still some difficulties in the current research status, which need to be improved and supplemented according to the specific theoretical deficiencies. Prior to adopting the negation theory, the legality of artificial intelligence is viewed more negatively from the standpoint of human rights. However, the situation continues to develop, and the reality is not that why because the situation is constantly changing. The realism with which the case's facts are scrutinised to arrive at the most equitable resolution will determine if artificial intelligence can be utilised as a legal matter in the future. According to artificial intelligence, the so-called ontology is a represented system that is representable rather than the objective reality that humans experience.

[24] *Id.*at 22.

[25] Lars Lindahl and Jan Odelstad, *Normative Systems and Their Revision: An Algebraic Approach,* 11 Artificial Intelligence and Law 81 – 104 (2003).

[26] Lalmohamed, Azar. *Expressing Hohfeldian legal concepts, traceability and ambiguity with a relation algebra-based information system*, (2014).