



THE IMPACT OF ARTIFICIAL INTELLIGENCE ON SCIENTIFIC RESEARCH IN THE FIELD OF LAW

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Received: 12/03/2024; Accepted: 17/06/2024; Published: 21/07/2024

Abstract:

In the context of the rapidly evolving technological revolution, the relationship between scientific legal research and artificial intelligence (AI) is increasingly intertwined, with both fields complementing and influencing each other. Specialized AI systems used in legal research have sparked a true revolution in the production, analysis, and interpretation of legal knowledge. These systems have enhanced the quality and efficiency of legal research and analysis through large language models, machine learning systems, and big data analysis. As a result, they have significantly improved the process of producing and processing legal knowledge with greater speed and efficiency compared to traditional methods by analyzing vast amounts of legal information. This advancement has also led to the emergence of what is known as Legal AI, which seeks to model legal reasoning. All of these developments have had a direct impact on legal scientific research in terms of reliability and the ethical dimensions of legal scientific inquiry.

Keywords: *Legal system, legal research, big data, natural language processing, large language models, machine learning, artificial intelligence.*

INTRODUCTION:

Knowledge cannot, in any way, be separated from humans, as it is the essence of their existence. When God Almighty first created man, He taught him the names, granting him the knowledge needed to fulfill his mission on Earth. Humanity has been in a constant pursuit of knowledge, striving for perfection a pursuit that has led, by the 21st century, to knowledge saturation and the emergence of what is known as the data revolution. Today, people can access diverse opinions and ideas quickly and easily. However, this revolution has also created challenges in identifying the essential and reliable knowledge needed to understand the world around us.

The emergence of artificial intelligence (AI)¹ is the result of accumulated scientific knowledge gained through scientific research, which has always been driven by humanity's passion to discover methods and tools that make life easier. Scientific research is a fundamental necessity for every person, regardless of their profession or status. Daily life problems require scientific thinking and methodology to solve them. Humans are distinct from all other creatures in that they are the only beings in this world capable of dealing with various symbols—primarily language. This ability has enabled humans to build civilizations and cultures and transmit them across generations².

Adhering to scientific research methodologies is what confirms the reliability of the knowledge obtained and determines its applicability. For instance, when a researcher arrives at a conclusion, as fellow researchers, we do not simply accept the result. We must also assess whether the researcher followed the accepted scientific methods in their field and whether the same result can be achieved if the same methodology and tools are applied, within the scientifically acceptable margins of error. All of this, ultimately, depends on human intelligence in searching for, organizing, and coordinating knowledge, as well as using methods of logic and reasoning.



However, this process can be time-consuming, and it may be impossible to account for all the factors influencing the phenomenon under study for various reasons. Additionally, data collection and analysis require significant intellectual effort, and scientific research can sometimes have shortcomings that other researchers take into consideration.

This leads to diversity in scientific research and the accumulation of knowledge, which has brought us to where we are today: the invention of a machine capable of simulating natural or human intelligence,³ so to speak. All sciences interact with it, either to benefit from its advantages or to develop mechanisms to mitigate its risks, ensuring it does not ultimately overpower human intelligence, which remains the primary source for creating and discovering knowledge.

Therefore, after this introduction, it is important to emphasize that there is no escape from using AI tools and systems to conduct scientific research. This paper aims to explore the limits of AI's capabilities, whether it can surpass human intelligence, and if AI systems can evolve to possess a type of consciousness and thinking that would enable them to conduct scientific research in the field of law. Additionally, it seeks to examine the challenges facing AI-supported scientific research. To address this issue, we must first define the characteristics of scientific research in the field of law, then explore the characteristics of AI systems, and finally, discuss the challenges that AI-supported legal research faces.

First: Characteristics of Scientific Research in the Field of Law

Scientific research is a methodical and rigorous process of inquiry conducted by a researcher to discover or uncover new information or relationships, as well as to develop, correct, or verify existing knowledge. This inquiry follows the steps of the scientific method, which includes choosing the appropriate approach, tools, and data collection methods⁴. Scientific research is a conscious intellectual activity characterized by objectivity and avoidance of bias toward any idea without a scientific basis. This ensures that the steps and results of scientific research are reliable⁵. It examines the relationships between phenomena and events⁶, making it a way of thinking and working that can solve complex scientific problems and deepen human knowledge⁷. Scientific research involves analyzing and critically evaluating a set of knowledge in a specific field to arrive at optimal solutions according to a defined scientific methodology. From this perspective, scientific research strives for perfection in human knowledge, regardless of the area being explored.

Applying these definitions or concepts to the field of law reveals that there is no universally agreed-upon definition of legal scientific research. This is due to differing opinions on whether legal sciences should be considered part of the social sciences, which deal with how law is applied in reality, or part of the humanities, which involve interpretive fields like philosophy, religion, history, and literature, or as independent legal sciences in their own right⁸.

However, it can be said that legal research consists of a series of interconnected processes that study legal systems and ideas with the aim of identifying legal facts, refining legal systems for greater completeness and effectiveness, diagnosing their flaws, and seeking to develop their strengths. All of this is done according to recognized scientific methodologies⁹. Legal research plays a crucial role in advancing legal sciences. It aims to improve the legal system and provide recommendations to address legal issues while meeting societal needs¹⁰. It involves investigating both individual and collective legal problems stemming from society, studying laws, regulations, systems, and constitutions, and working to improve them. Researchers seek to find appropriate solutions to legal problems by enacting, amending, or changing laws and systems, or by optimizing their application¹¹. Whether normative (theoretical) or empirical, legal research possesses many characteristics due to the complex concepts, theories, and principles upon which it is based, and the wide range of fields it addresses. It focuses on interpreting legal rules and the principles behind them and understanding the rationale of judicial decisions. These aspects make legal research particularly intriguing and challenging for artificial intelligence. It is distinguished by: (the list continues with specific characteristics).



1. Diversity of Knowledge Fields:

It can be said that the law encompasses various types of knowledge produced by humans, as it intersects with mathematical sciences, natural sciences, social sciences, humanities, astronomy, statistics, and economics. There is hardly any branch of knowledge that the law has not addressed, either by regulating it, setting boundaries, or establishing mechanisms that aid in understanding and applying the law. These fields provide us with a vast array of primary and supporting sources for scientific research in the form of laws, rules, principles, and judicial decisions. The reliance on these sources varies depending on the nature of the prevailing legal system. In common law systems, court decisions form the primary source of law, whereas, in civil law systems, legislation is the primary source, and court decisions serve as interpretive or supplementary sources¹².

The process of researching legal principles, the philosophical foundations upon which they are based, and the legal rules in their various sources is not as straightforward as it may seem at first glance. It requires significant time, effort, and extensive knowledge of the rules and methodology of scientific research, in addition to an understanding of certain technical and procedural issues. These include, for example, principles like justice, rules of interpretation, legal drafting rules, civil and criminal procedure rules, the hierarchy of laws, constitutional supremacy over laws¹³, the principle of legality, non-retroactivity, the two-tier litigation system, and the principle that anyone who causes harm to another is obligated to compensate them. We observe that as the targeted field of legal research changes in terms of time, place, or subject matter, the prevailing information or ideas also shift. However, this does not imply complete separation, as there is significant mutual support and interconnection between them.

2. Diversity of Research and Interpretation Methods:

Legal research relies on a variety of scientific methods, including mental approaches such as deduction, inference, and induction, as well as procedural methods like analysis, description, comparison, or historical analysis¹⁴. Deductive reasoning involves studying specific instances to derive a general rule, while inductive reasoning relies on gathering scientific and material evidence to form conclusions that are both valid and reliable. The researcher studies the individual parts to reach final results related to the research topic¹⁵. Furthermore, interpretive rules vary according to prevailing legal ideologies. When a legal professional applies a legal rule in practice, they must interpret it, meaning they must determine its content and meaning. This interpretation is not carried out by a single body; at times, the legislator interprets the law in another text, the judiciary interprets it during its application, and at other times, legal scholars interpret it¹⁶.

Legal systems, throughout their development, do not follow the same approach in terms of reasoning and interpretation. This is natural, given that law, as a science, is based on the human mind, which creates systems, and it is expected that legal theories will be influenced by prevailing societal ideas. For example, the evolution of human thought from individualistic principles to socialist ones led to significant developments in the theory of obligations¹⁷. In common law countries, legal interpretation and reasoning are based on the principle of judicial precedents, which obligate judges to follow previous rulings from other courts. However, in civil law countries, judges' reasoning and interpretation of the law are based on respecting the legal text and interpreting it within its original context. Nevertheless, this is not absolute, as judges often encounter ambiguous texts that compel them to rely on analogous cases to reach a judgment or decision.

3. Availability of a Vast Array of Reliable Sources:

Since law is closely connected to various scientific fields, these domains allow for the exploration of their relationships, the identification of underlying principles, and an understanding of the mutual influence between them. Today, every field of knowledge includes countless studies in the area of law. For instance, if we are studying a criminal phenomenon, the rules of scientific research require us to investigate the causes of these criminal behaviors. This leads us to delve into psychological (psychology) and social (sociology) causes. Similarly, when conducting legal research on an economic activity, the economic background of the subject must be highlighted. Over time,



this results in a vast accumulation of scientific research that nourishes legal knowledge. This includes written laws at various levels, peer-reviewed journals, and jurisprudential books that establish the foundations for these laws. In the end, all of this provides a rich and fertile ground for objective legal research.

4. Flexibility and Multiplicity of Legal Concepts:

Legal research does not only focus on law as a science that comprises a set of fixed legal rules, principles, and concepts. It also considers the law as it appears in human behavior¹⁸. This makes the results of legal research relative. What may be applicable in one time and place may not be suitable for another, meaning that there is no absolute right or wrong in legal research. In contrast to scientific knowledge, where fixed axioms often remain stable over time, legal concepts are more flexible and open to change, even when certain general cases appear quite clear¹⁹. Often, there is a middle ground between "black" and "white," indicating that legal concepts exhibit a certain level of flexibility and are subject to change. Legal concepts can also be shaped in various ways. They may be fundamental concepts that arise from professional reflection in legal practice, shaped by jurisprudence, or formed as a result of the theoretical organization of legal reality²⁰.

Dr. Samir Tanagho, in his book *Sources of Obligation*, discusses how these sources have evolved over time, and how jurisprudence has consistently added new sources of obligation. For instance, the jurist Modestinus added law as a fifth source of obligation in Justinian's Digest, which Napoleon adopted as it was. To this, he added the modern legal source of unilateral will as an independent source, affirming that the theory of obligation "resists reckless innovations"²¹.

Thus, we can conclude that scientific research in the field of law changes depending on the time and place in which it occurs and the area of law being researched. For example, civil liability was initially based on fault, and most jurisprudence adopted this basis. However, with the advent of the industrial revolution, fault alone became insufficient to establish liability in the face of the threats posed by this foundation to economic activity. Legal researchers, therefore, sought a new basis for liability that would suit the circumstances brought about by the industrial revolution. The solution was to create a new form of liability—liability based on risk or presumed fault. This sparked a flood of scientific research, legal texts, and judicial applications, with some supporting fault-based liability and others defending risk-based liability. The dispute was eventually resolved, to some extent, in the "gray area" that recognized both theories under specific conditions. The same can be said for other areas of law, where the abundance of legal research may seem excessive but is, in fact, a response to the evolving changes in society.

Second: The Emergence of Artificial Intelligence and Its Impact on Legal Scientific Research:

The continuous development of computer science has permeated all areas of life, including legal scientific research. This has led to a massive explosion of legal information (big data), which forms the foundational basis for the emergence of artificial intelligence (AI)²², thanks to countries establishing specialized research centers to invest in this field.

Artificial intelligence belongs to the domains of computer science and engineering, but it is significantly influenced by other disciplines, such as philosophy, natural sciences, neuroscience, and economics. Due to the interdisciplinary nature of AI, few researchers agree on a common definition or understanding of intelligence or AI in general²³.

1. The Concept of Artificial Intelligence:

AI can be viewed as a collection of technologies that have emerged from both academic research and private sector studies²⁴. Baker and Smith offer a broad definition of AI, describing it as computers performing cognitive tasks typically associated with human minds, especially tasks related to learning and problem-solving²⁵.

AI systems do not refer to a single technology; rather, the term is now used as an umbrella for a range of technologies, from algorithms to machine learning, natural language processing, and neural networks. This diversity makes it very challenging to define AI purely from a technological perspective. AI systems analyze knowledge, process information derived from that data, and make decisions or take actions aimed at achieving a particular goal. These systems may either use



symbolic rules or learn a digital model, and they can adapt their behavior by analyzing how the environment responds to their past actions²⁶. However, all these tasks or capabilities of AI are fundamentally based on a set of core programs, particularly large language models (LLMs)²⁷, which have significantly contributed to advancing legal scientific research. This is because legal research relies heavily on language—not only as one of the many forms the law can take but as the only form capable of realizing the fundamental principles of the rule of law²⁸.

Additionally, machine learning (ML) programs and knowledge-based systems play a major role in bringing about a qualitative leap in scientific research. Their foundation lies in the big data collected from various digital platforms and the use of the internet (data gathered from the digital age).

2. Characteristics of Artificial Intelligence (AI):

One of the key features of AI is its exceptional ability to analyze vast amounts of data and predict expected outcomes based on that data. This capability greatly supports legal scientific research by allowing the collection of large datasets, simplifying their categorization and classification, and thereby reducing the time researchers spend on routine tasks like data collection and organization, tasks that previously required significant time and effort.

AI is an interdisciplinary field, drawing on ideas, techniques, and researchers from various domains, including statistics, linguistics, robotics, electrical engineering, mathematics, neuroscience, economics, logic, and philosophy. AI can be considered a set of technologies that originated from academic and private sector research. Thus, a deeper understanding of the fundamental technologies on which AI is based can offer us a more valuable perspective²⁹.

Moreover, AI systems have evolved beyond merely analyzing data and training systems to perform a wide variety of legal tasks. They now have the ability to explain and justify their predictions from a legal perspective by employing machine learning techniques³⁰. This means that AI has acquired a certain degree of transparency through the ability to understand how AI systems make their decisions (Explainable Artificial Intelligence - XAI). Additionally, AI can provide reasoning or evidence for the results it reaches, which is referred to as Justifiable Artificial Intelligence (JAI). This allows legal researchers to verify the accuracy of the outcomes, thus increasing the reliability of the analyses or conclusions achieved through AI.

Third: Challenges of AI-Supported Legal Scientific Research

The primary goal of legal scientific research is to critique laws, regulations, and systems, highlight the relationships between them, and identify their flaws in order to reform and find suitable legal solutions to a problem or legal phenomenon. This includes suggesting amendments to laws, repealing outdated ones, proposing alternatives, and filling gaps that may exist in legal legislation. Additionally, researchers strive to discover new facts, information, or relationships, as well as to gain deep scientific knowledge in the field of legal studies, to ensure the proper understanding and good application of laws and systems in judicial and legislative contexts³¹.

In contrast, AI systems aim to solve problems related to human thinking by attempting to simulate human intelligence in the way it analyzes information. AI possesses remarkable capabilities in generating texts and analyzing vast amounts of data, including laws, regulations, judicial rulings, and previous legal studies. This allows research to extract patterns and critical information that help in understanding legal issues, thus facilitating the identification of appropriate solutions.

Moreover, AI aids in understanding the evolution and application of laws, and it provides users with the ability to make decisions independently without human intervention. It also simplifies the search for laws, regulations, and judicial precedents, offering researchers a broader and deeper understanding of their research topics while saving them time and effort.

1. Benefits of Using AI Tools in Legal Scientific Research

Until recently, there was a sense of disconnect between law and technology. However, the collaboration between various fields of science at universities and colleges has played an active role in the development of legal technology. Nearly all major universities have recognized these developments by establishing specialized research centers and forming various alliances with law schools, mathematics departments, and computer science and data science faculties, in



collaboration with technology companies, judicial authorities, and law firms. This collaboration aims to achieve new levels of legal efficiency, transparency, and access to legal systems worldwide³².

AI tools provide numerous benefits to legal scientific research, most notably by reducing many routine tasks that would otherwise consume the researcher's time and effort. These tools can achieve various legal research goals and help legal AI systems built on argumentation structures to generate legal conclusions. By inputting legal information and evidence, these systems can use such structures to offer recommendations or conclusions about cases, which significantly serves the objectives of legal research.

Today's AI systems are not necessarily designed to match higher human capabilities such as abstract thinking, concept analysis, general problem-solving skills, or a wide range of functions associated with human intelligence. However, they may outperform in more narrow, specialized areas, where rapid research and computation offer advantages over human perception³³. These systems, however, are not capable of creating knowledge; their task is merely to uncover existing knowledge. This is due to the simple fact that AI's analyses and results are based on datasets it has been trained on.

AI combines the knowledge stored within it, and its outputs do not exceed the pre-trained content, unlike scientific research, which is based on originality and the novelty of knowledge produced through human intelligence, which is unlimited in its capacity to create new knowledge. The ongoing technological advancements we see today are a testament to the systematic human thinking that has always been the foundation of progress.

Despite this, AI systems do possess some of the characteristics of scientific research mentioned in the first section of the study and offer unique advantages for research. The integration of AI-supported applications, such as Typeset³⁴, ChatDoc³⁵, Aithor, Consensus³⁶, Jenni³⁸, and other tools, significantly simplifies many aspects of scientific research. These applications save time in the academic production process by shortening time-consuming tasks like accessing and organizing information relevant to the research field. They also assist in reading various types of scientific papers, enabling researchers to quickly access and organize information, as well as efficiently review accumulated references, which are now found in nearly every domain³⁹.

AI is also capable of creating mechanisms for solving problems within organizations that rely on objective judgment and precise solution assessments. It enhances knowledge levels by providing multiple solutions to problems that may be difficult for humans to analyze in a short period of time. AI also studies the logical thought processes of humans, giving it a relatively consistent performance, unaffected by subjective human factors like forgetfulness⁴⁰.

Furthermore, expert systems have the ability to consolidate and preserve the knowledge of multiple experts. These systems are likely to be used to assist in performing many tasks that experts previously considered routine or trivial, though they required their attention in the past. If expert systems can help with such tasks, researchers will be able to focus on what they do best—tasks that will likely remain beyond the reach of computers for some time—namely, addressing and solving complex and difficult problems, even for human experts.

AI can also enhance the quality and reliability of scientific research. Expert systems can improve the quality of legal work by preserving rare legal expertise and making it widely available. By encoding that knowledge, AI can promote a standardized approach to similar issues, unify procedures, and integrate quality control systems. Moreover, AI systems do not experience "bad days," which often hinder human performance.

While it may be difficult to accurately assess the benefits AI offers in terms of human resources and quality, the financial advantages can be more easily identified in their main dimensions⁴¹.

2. Concerns About the Use of AI Systems in Scientific Research

Despite the numerous advantages AI-based systems offer to scientific research, there are many concerns that threaten the integrity of research in the age of artificial intelligence. Even with the availability of knowledge, these systems could lead to intellectual stagnation and passivity among



legal researchers if they become overly reliant on AI tools. Additionally, several concerns need to be considered by researchers, as they affect the overall reliability of scientific research. These concerns include:

- **Lack of Update Capability:** AI systems' training data is limited to a specific date, meaning they cannot update their systems without regular input. Without continual updating, these systems may become obsolete at a certain point⁴².
- **Reliability and Accuracy:** Training data comes from online content (websites, books), which is not always thoroughly verified, raising concerns about the reliability of the sources used to gather information⁴³.
- **Hallucination:** AI-generated text may be coherent and convincing but entirely fictional (referred to as "hallucination"). For example, an AI may fabricate references, which completely undermines the quality and reliability of scientific research⁴⁴.
- **Transparency and Interpretability:** Deep neural networks are often seen as "black boxes," making it difficult to understand the algorithms or mechanisms used to produce results, which challenges the accountability of AI outputs⁴⁵.
- **Ethical Concerns:** AI systems can raise issues related to scientific integrity, which is a cornerstone of legal and scientific research. If the information provided by AI is not properly documented, it can lead to plagiarism or scientific theft. Applications like ChatGPT and similar tools that generate relatively coherent textual information have led to ethical violations, particularly regarding plagiarism. In some cases, researchers have produced scientific articles, papers, and even theses directly using ChatGPT⁴⁶, making it impossible to determine whether the work was generated by human intelligence or AI, thereby affecting the trustworthiness and quality of the research outcomes.
- **Bias and Unfairness:** AI training data can be biased, leading to unfair or inaccurate outcomes. For instance, religious biases⁴⁷ or other ethical issues may arise. Since large language models are trained on real-world data, this can perpetuate existing biases, resulting in discriminatory or unjust decisions⁴⁸.

Additionally, pre-training data is often filled with biases. As AI models like deep learning systems are trained on massive amounts of textual data, they are prone to inaccuracies and biases, leading to outputs that may only reflect partial or incorrect perspectives. Furthermore, AI may struggle with more complex data or concepts that require human cognitive and emotional understanding, which can be particularly problematic in theoretical research aimed at creating new conceptual frameworks or models⁴⁹. If these biases are left unchecked, they could influence legal advice or ideas generated by large language models (LLMs), potentially leading to unfair treatment in legal contexts⁵⁰.

Another major issue is the difficulty of translating legal rules into a format that computers can use. Even after finding a machine-readable representation for a set of problems, there is no guarantee that this will provide the best solution, as success or failure in solving complex problems often depends on framing the problem correctly from the start⁵¹.

Efforts are being made to address some of these concerns, such as enabling AI systems to access real-time information through APIs. In the future, AI might be aligned with societal values by monitoring and incorporating human feedback to adjust biases and mitigate some ethical concerns in large language models⁵².

All these concerns regarding the use of artificial intelligence in scientific research have been and still are the subject of criticism from traditional scientific research. However, humans themselves are not immune to these ethical concerns, as the flaws raised against AI-supported scientific research also exist in traditional scientific research. There are several common errors that hinder scientific research, including:

1. **Errors due to the weaknesses of the human mind**, which imagines the existence of things that do not actually exist but are perceived by individuals due to personal bias or because their thinking is shaped by the molds imposed by society.



2. **Errors related to language**, as it often fails to express the intended meaning accurately.
3. **Errors stemming from relying on trusted authorities**, based on the widespread illusion that fundamental knowledge has already been discovered, and all one needs to do is return to trusted old sources to learn what they do not yet know⁵³.

The philosophical question remains whether machines will ever truly be able to think or even develop consciousness in the future, rather than merely simulating thinking and displaying rational behavior. It is unlikely that such strong or general artificial intelligence will exist in the near future.

There is a need for legal regulations that clearly define the use of AI applications, such as ChatGPT, Aithor, TuneChat, Gemini, or Copilot, in producing scientific knowledge, with appropriate citation and even including the specific prompts used to extract the information. Additionally, technological advancements are needed to detect the direct or indirect use of AI applications. Despite the development of software to detect potential misuse (plagiarism) of AI tools, the primary issue is not the effectiveness of plagiarism detection programs in overcoming emerging ethical problems but rather the researcher's commitment to the principles and ethics of scientific research.

Researchers and AI developers should have access to diverse and unbiased training data, ensuring transparency. Researchers should also possess a deep understanding of the research topic and indicate their use of AI systems, explaining the purpose behind their usage⁵⁴.

AI systems may also lead to unfair competition among researchers due to academic rivalry and the influence of biases in legal research, serving specific ideologies.

CONCLUSION:

In conclusion, AI systems have significantly contributed to the advancement of legal scientific research by performing routine tasks typically carried out by researchers, such as gathering sources, categorizing them, and conducting preliminary analyses. Currently, AI systems are able to perform these tasks due to their reliance on big data, which serves as a valuable aid for legal researchers. However, it is important to emphasize that AI is merely a tool and not a research methodology in itself. For it to be considered a scientific method, big data analysis must be paired with a theoretical framework to generate true knowledge and achieve the ethical objectives of science.

Given the rapid advancements in this field, it is essential that human intelligence continues to drive progress. AI systems should be used under the supervision of specialized legal researchers to ensure compliance with the ethical principles of legal scientific research.

The intersection between law and AI presents a challenge for researchers, as the field is currently dominated by experts in AI technology. However, the intelligence developed at this intersection is legal AI, which means that legal experts, not computer scientists, should lead the research in this area.

To integrate AI into legal scientific research effectively, it is crucial to encourage the development of counter-technologies that can detect any illegal use of AI systems, as well as to establish strict legal frameworks to regulate their use in scientific research.

Finally, it must be emphasized that AI does not create or generate new knowledge; rather, it uncovers existing knowledge that has been processed within the context of big data. The true value lies not in the speed of accessing information but in the awareness of and ability to understand it.

Legal scientific research is the primary function of legal professionals, whether they are judges, lawyers, or academic legal researchers. This function cannot, under any circumstances, be handed over to machines (AI). If we do so, we risk surrendering control to machines, allowing them to govern and dominate us.

Endnotes

1. The European Parliament, in its 2020 framework initiative on the civil liability regime for artificial intelligence, which includes specific recommendations regarding this liability system, did not focus on defining artificial intelligence itself but rather on defining AI systems. These are



defined as: "A system—whether software-based or embedded in physical devices—that exhibits behavior mimicking intelligence, particularly by collecting and processing data, analyzing and interpreting its environment, and interacting within it, with a certain degree of autonomy, aiming to achieve specific objectives."

The first observation that can be drawn from this definition is that the European legislator clearly distinguishes between artificial intelligence as a technical and philosophical concept and AI systems. A reader of the report and its various annexes can conclude that the European legislator concentrated on the idea of AI systems while entirely overlooking artificial intelligence itself. Therefore, the term used in legal dealings with this technology has now become "AI systems" rather than "intelligence."

2. Rahim Younis Karo Al-Azawi, *Introduction to the Scientific Research Methodology*, 1st edition, Dar Dijla, Amman, 2007, pp. 21-22.

3. There are two main perspectives on the meaning of "artificial" in the context of artificial intelligence. Critics argue that artificial intelligence is merely an illusion of intelligence. They consider these machines to be complex devices that mimic human thinking but do not actually think. On the other hand, proponents believe that AI can genuinely think, even if differently from human thinking. They compare it to how a car moves differently from a rabbit, yet both still move. **Supporters of the Illusion of Thinking Theory:** They claim that AI only appears to think. For example, when we see a robot or computer making decisions, it is simply following programmed instructions and is not truly thinking like a human. This is similar to how a puppet may seem to dance but is actually controlled by strings.


Supporters of the Genuine Thinking Theory: They argue that once machines are built and programmed, they can perform tasks that seem like thinking. Just as a car can drive and an airplane can fly, AI can think in its own way. This means that even if AI's thinking differs from human thinking, it is still real. Do we need to prove that AI truly thinks? For instance, we don't need to prove that a lightbulb gives light; we just see that it does. Similarly, if AI shows signs of thinking, why not accept that it is intelligent? This is a complex issue because thinking is not as easy to observe as light or movement. The challenge with AI is that thinking is not something we can easily observe. Unlike a bright lightbulb, we cannot see the thoughts happening inside the machine. This makes it difficult to determine whether AI is truly intelligent or merely pretending to be. In short, the debate over AI revolves around whether it truly thinks or just appears to think. The question of whether AI is intelligent remains open because thinking is not as visible as other processes. Therefore, the debate continues regarding the nature of AI intelligence.

For more details, see *Sokolowski-NaturalArtificialIntelligence-1988.pdf*.

4. Ahmad Badr, *Principles and Methods of Scientific Research*, 9th ed., Academic Library, (No publication place), (No publication year), pp. 21-22. Saleh Tlais, *Methodology in the Study of Law*, 1st ed., Zain Legal Publications, Beirut, 2010, p. 30.
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9. Al-Sheikhly, Abdelkader. *Rules of Legal Research*. Amman: Dar Al-Thaqafa Publishing and Distribution, 2005, p. 5.
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11. See: Ali Jedai. *Methodology of Legal Scientific Research and Research Methods*, 1st ed., Dar Jouda for Publishing and Distribution, Algeria - (Batna), 2024, p. 14.
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14. For further details, see: Saleh Tlais, *Ibid*, pp. 31-32.
15. Ahmeidouch Madani, Al-Wajeev in Mahs, p. 28.
16. Saleh Tlais, *Ibid*, p. 103.
17. See: Samir Abd Al-Sayed Tanagho, *Sources of Obligation*, 1st ed., Al-Wafaa Legal Library, Alexandria, 2009, p. 2.
18. Afif, Noor *Ibid*, p 95.
19. Rissland, E. et al, *Artificial Intelligence and Law*, *Ibid*, p 5.
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