REDEFINING OWNERSHIP: LEGAL CHALLENGES OF AI GENERATED INVENTIONS

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ABSTRACT

This paper examines the intersection of artificial intelligence and intellectual property, focusing on how AI disrupts traditional creative processes and challenges established legal frameworks. Through case study of DABUS it highlights the implications of AI-generated inventions, emphasizing the complexities of attributing ownership and inventorship. Current legal frameworks are analyzed to identify gaps in addressing AI's role in innovation, with particular attention to the limitations of human-centric IP laws. The paper concludes by proposing reforms to redefine inventorship criteria, establish clear ownership guidelines, and adapt IP laws to ensure equitable protection and commercialization of AI-generated works. These recommendations aim to foster a balanced approach to innovation in an era increasingly shaped by artificial intelligence.

1. INTRODUCTION

The emergence of artificial intelligence has fundamentally transformed numerous industries by enabling machines to perform tasks once considered exclusive to human intelligence. From creating art to developing innovative technologies, AI's expanding capabilities have sparked significant debates around creativity and intellectual property. Traditional intellectual property frameworks are grounded in the assumption of human authorship; however, as machines increasingly contribute to the creation of original works, these legal systems are confronted with unprecedented challenges.

This paper intends to explore the challenges posed by artificial intelligence in relation to intellectual property laws, particularly focusing on how these laws engage with inventions created by AI. A notable case in this examination is the DABUS case, where an AI system was put forward as an inventor under patent law but encountered legal obstacles due to existing definitions that require human inventorship.

As society navigates these complexities, it is essential to comprehend not only the legal ramifications but also the ethical considerations surrounding ownership rights in an era increasingly influenced by artificial intelligence. This research aims to offer insights into the potential reforms necessary within IP law to adapt to this evolving landscape while ensuring that innovation continues to flourish.

2. ARTIFICIAL INTELLIGENCE

2.1 WHAT IS ARTIFICIAL INTELLIGENCE

Artificial intelligence is the induction of human intelligence by machines, specifically computer systems, allowing them to do tasks that would normally require human cognition, such as thinking, decision-making, and problem-solving. It is an interdisciplinary field that combines computer science, data analytics, hardware and software engineering, and even neurology and philosophy.

AI systems are intended to process massive datasets, discover patterns, and make accurate predictions or judgments. They use algorithms and techniques such as machine learning (ML), which trains models to learn from data without explicit programming, and deep learning, a

subset of ML that uses neural networks inspired by the human brain to analyze complicated data. AI applications span from image identification and natural language processing to self-driving cars and generative technologies for creating creative content.

Thus, the field of AI continues to evolve with advancements in technology, offering tools that enhance efficiency and innovation across industries while addressing increasingly complex challenges.[1]

2.2 TYPES OF ARTIFICIAL INTELLIGENCE –

- **NARROW AI**

Narrow AI, often known as weak AI, refers to artificial intelligence systems that are designed to accomplish certain tasks and orders. These systems have limited capacities and cannot autonomously learn skills outside their intended functions; they are designed to excel in a single cognitive domain. Currently, all AI systems in use are classified as narrow AI. Examples of narrow AI include self-driving cars and AI-powered virtual assistants.

- **ARTIFICIAL GENERAL INTELLIGENCE**

Artificial General Intelligence (AGI) is a conceptual form of artificial intelligence that aims to perform a broad spectrum of tasks, including reasoning and problem-solving at a level comparable to that of humans. The goal of AGI is to develop machines that exhibit versatile, human-like intelligence, thereby functioning as highly adaptable assistants in various aspects of daily life. Unlike narrow AI, which is limited to specific functions, AGI aspires to replicate the cognitive flexibility and adaptive capabilities inherent in human intelligence.

- **REACTIVE MACHINE AI**

Reactive machines are defined by their reactionary nature. They can respond to immediate requests and duties; nevertheless, they lack the ability to store memories, learn from previous experiences, or improve their functionality via practice. Furthermore, reactive computer systems can only respond to a limited set of inputs, making them the most fundamental form

[1] Bulitin, https://builtin.com/artificial-intelligence/types-of-artificial-intelligence, (19th jan. 2025)

of artificial intelligence.

In practical applications, reactive machines are useful for doing simple autonomous tasks like as screening spam in email inboxes or recommending products based on a user's purchasing history. However, reactive AI cannot build on previous knowledge or execute increasingly difficult tasks. IBM deep blue and Netflix recommendation engine are few examples of the reactive machine AI

- **LIMITED MEMORY AI**

Limited Memory AI differentiates itself by its ability to store previous data and use that information to create projections, resulting in a limited immediate database of information that guides its behaviors. This sort of AI constantly learns from circumstances, enabling its interpretations to become increasingly precise over time.

The process of deep learning, which replicates how neurons in the human brain work, is at the heart of Limited Memory AI. This allows machines to absorb data from their experiences and learn improving their capacity for making decisions. Currently, Limited Memory AI accounts for the majority of AI applications, ranging from simple chatbots to complicated systems such as self-driving automobiles.

- **SELF AWARE AI**

Self-aware AI is a potential level of artificial intelligence in which machines have awareness of oneself. Self-aware AI, which is frequently related with the concept of the technological singularity, represents a level of technology that extends beyond the concept of consciousness. Achieving self-aware AI is regarded as one of the major objectives in AI development.

It is anticipated that if self-aware AI is developed, these machines will act independently of human supervision, as they will not only be able to perceive the emotions and sensations of others but will also have a sense of themselves. The prospect for self-awareness generates important moral and intellectual concerns about the impact of advanced AI systems on the community and human interaction.

3. INTELLECTUAL PROPERTY

3.1 OVERVIEW OF INTELLECTUAL PROPERTY

Intellectual Property (IP) is a legal concept for mind-made creations such as inventions, works of art, designs, symbols, names, pictures, and computer code. IP is safeguarded by legal systems such as patents, trademarks, and copyrights, which allow inventors to gain financial compensation or acknowledgment for their discoveries. These rights can be officially documented with government agencies and play an important role in the preservation of aboriginal Knowledge.

Businesses value intellectual property due to how it allows them to distinguish themselves from adversaries and gain an edge over them. Furthermore, intellectual property is often a critical component of the assets of an organization and can account for a significant amount of the company's total worth.

3.1 TYPES OF INTELLECTUAL PROPERTY

- **COPYRIGHT**

Copyright is an enforceable agreement that provides authors with sole rights to their creations, allowing them to control, evolve, share, modify, and publicly exhibit or perform them. It applies to a wide range of creative expressions, including literature, music, cinema, computer software, artistic designs, and architectural works. Copyright protects the expression of ideas, not the concepts themselves, allowing authors to benefit from their creative work while forbidding unlawful usage.

- **TRADEMARK**

A trademark is recognized by law as a unique mark or symbol that distinguishes one person's or entity's goods and services from others. In nature, a trademark is a visual identification that can take many forms, such as gadgets, words, labels, or other graphical representations, and is used to indicate unique goods and/or services provided by different suppliers.

Trademarks can include a variety of features, such as drawings, images, colors, words, letters, and numbers. a trademark is an invaluable company resource for the proprietor and is regarded a type of intellectual property that possesses multiple rights. These rights allow the proprietor

to secure the reputation of their company in the marketplace and prevent unlawful usage by others, thereby protecting their commercial interests and increasing brand awareness.

- **PATENTS**

A patent is a type of intellectual property protection that protects inventions and is granted by a government within a certain jurisdiction for a limited duration. Patent rights give the inventor an irrevocable license to manufacture, use, import, or sell the invention in the country where the patent was issued. This exclusivity prohibits unauthorized individuals or companies from using the patented innovation without the patent holder's permission.[2]

Each type serves a different function, but they all aim to encourage creativity by giving creators authority over what they create.

3.3 DEVELOPMENT OF INTELLECTUAL PROPERTY LAWS

Intellectual property rules date back generations, but acquired substantial popularity during the Industrial Revolution, when creativity prospered alongside technological developments. Early laws were largely concerned with preserving material goods. however, as the use of computers and artificial intelligence have advanced, there is an urgent need for these rules to develop.

Traditionally based on human composition standards, which allowed only natural individuals to claim rights, current frameworks suffer when dealing with non-human creators such as AI systems capable of producing creative works independently.

4. AI IN CREATIVE FIELDS

4.1 INTERSECTION OF AI AND CREATIVITY

The convergence of AI and creativity is fundamentally altering the fields of art, music, and literature, ushering in a new era of innovation and expression. This confluence allows artists, musicians, and authors to explore unexplored territory by combining human intuition with computer precision to create works that defy conventional limitations.

AI technology, specifically Generative Adversarial Networks (GANs), are transforming the

[2] Wipo, https://www.wipo.int/about-ip/en/, (19th jan 2025)

field of visual arts. Artists use these computer programs to create intricate and fascinating pieces that challenge artistic norms. For example, Refik Anadol's initiatives use machine learning to comprehend huge amounts of data, resulting in compelling visuals that challenge our definition of art.

In the field of music, AI is creating an atmosphere of collaboration in which composers can create unique compositions. AIVA (Artificial Intelligence Virtual Artist) encourages musicians by giving creative themes and harmonies that can be used as inspiration to create additional compositions. The collaboration between human producers and AI not only improves the creative process, but it also eliminates the distinction between human and machine-generated music.

AI's influence on literature is similarly substantial. Natural Language Processing (NLP) systems may examine massive written corpuses to construct cohesive storylines and conversations. OpenAI's GPT models demonstrate this power by writing poetry and prose that replicate human creativity. This ability to generate content poses interesting concerns about authorship and creativity in the digital age.[3]

4.2 HOW AI COULD DISRUPT CREATIVE WORK

In the midst of rapid technology developments, creativity has long been considered as a distinctively human characteristic, particularly vulnerable to disruption from technology and critical to determining the future. Psychologists who study behavior have even labeled creativity as a "human masterpiece," highlighting its unique significance.

However, the rise of generative AI apps, such as ChatGPT and Midjourney, is challenging this perspective and drastically changing the creative sectors. These powerful AI simulations, trained on large datasets and improved with user feedback, can generate fresh content in a variety of formats, including text, graphics, audio, or combinations thereof. Consequently, generative AI is gaining traction in professions that rely significantly on content generation, such as writing, image design, coding, and other knowledge-intensive tasks.

The ramifications of this transformation are substantial. Generative AI not only speeds up the development of creative products, but it also brings new approaches to ideation and execution.

[3] Aoki studio , https://aokistudio.com/artificial-intelligence-in-creative-domains.html , (19th jan 2025)

While it raises worries about potential standardization and loss of originality in collaborative creative work, it also provides chances to boost human creativity by streamlining procedures and increasing access to artistic instruments. As a result, the convergence of AI and creativity poses both a challenge to traditional concepts of human inventiveness and an opportunity to push the bounds of creative expression.

5. DABUS CASE

Dr. Stephen Thaler's Device for the Autonomous Bootstrapping of Unified Sentience (DABUS) is the first AI system to be named as an inventor in a patent application, a significant development in patent law. DABUS sought patent protection for a computational invention developed between 2018 and 2019. This application marked a watershed moment in patent history, as it was the first time an AI was submitted as an inventor for patent purposes.

The central legal issue emerged from the claim that an AI might be recognized as an inventor under current patent regulations, which usually require inventors to be natural beings. The European Patent Office (EPO), the UK Intellectual Property Office (UKIPO), and other jurisdictions rejected Thaler's applications because DABUS, as a machine, did not fulfill the legal definition of an inventor. The UK Supreme Court ultimately supported this position, ruling that only humans can be identified as inventors under the Patents Act 1977.

This case raises important legal and philosophical problems about AI-generated inventions and ownership rights. It emphasizes the necessity for prospective intellectual property law amendments that accommodate AI's expanding role in innovation while maintaining clear definitions of authorship and inventorship. As AI advances, the DABUS case remains an important reference point about intellectual property rights in the context of artificial intelligence.[4]

6. LEGAL FRAMEWORK ADDRESSING AI GENERATED WORK

Traditional laws frequently struggle to keep up with the rapid improvements in AI, resulting in ambiguity about responsibility, accountability, and ethical norms. Policymakers worldwide are

[4] David De Cremer, Nicola Morini Bianzino and Ben Falk, Harvard business review , (19th jan 2025 5:00 pm) https://hbr.org/2023/04/how-generative-ai-could-disrupt-creative-work .

faced with developing comprehensive legislation to oversee AI use.

Countries are beginning to implement AI-related laws; for example, the European Union's GDPR includes safeguards to protect persons' rights in the age of AI. Similarly, countries such as the United States and Canada are developing frameworks to address concerns about bias and accountability in AI systems.[5]

Traditionally, copyright law has required that human authorship be established in order to be protected. In jurisdictions such as the United States, the Copyright Office has specifically stated that works created purely by AI with no human interaction do not qualify for copyright protection. Similarly, in the European Union and other territories, copyright protection requires demonstrable evidence of human invention.

Nonetheless, when human creators make significant contributions—for example, selecting inputs, fine-tuning algorithms, or editing outputs—the resultant work may be eligible for copyright protection, with the human contributor identified as the legal owner. Patent law faces comparable issues, as most governments require that inventors be natural persons. In high-profile examples such as the DABUS patent applications, courts and patent offices in the United States, Europe, and Australia have rejected patents with AI as the inventor, arguing that inventorship is inherently related to human creativity and problem-solving ability.

This approach has been criticized for failing to appropriately portray the importance of AI in innovation. Proponents of reform seek for a broader definition of inventorship that recognizes AI as a contributor, with ownership going to the AI's developer, operator, or user. In many cases, commercial agreements between developers and clients define ownership rights associated to the usage of AI systems. While this strategy is flexible, it may not adequately address broader policy challenges affecting innovation and the public interest.

As we navigate this ever-changing landscape impacted by artificial intelligence, stakeholders—including legislators, engineers, and ethicists—must work together to develop strong frameworks that assure responsible use while encouraging innovation for all.

[5] Gpf , https://www.globalpatentfiling.com/blog/brief-overview-dabus-patent-case , (19th jan 2025)

7. REFORMS

7.1 CHANGES IN LEGISLATIONS

To address deficiencies indicated in earlier sections, legal recommendations to redefine ownership arrangements are urgently needed. This includes recognizing contributions produced exclusively through autonomous processes, without direct human involvement. Creating new categories under current IP frameworks can address the characteristics of machine-generated outputs.

Introducing provisions allowing designated representatives to hold rights on behalf of AIs could ensure appropriate protections while addressing concerns about potential misuse and abuse associated with formal recognition of non-human entities. Clarifying authorship/inventorship definitions can improve clarity and confidence for future discoveries resulting from technological advancements.

7.2 CHANGE IN IP TRENDS

The landscape of intellectual property laws is anticipated to evolve in the future due to rapid technological breakthroughs. As more enterprises integrate AI into their workflows, established frameworks for handling authorship/inventorship claims based on machine-generated outputs will face growing scrutiny.

To achieve success, it's important to strike a balance between supporting innovation, defending public interests, and guaranteeing equitable access to opportunities, whether created by humans or machines, while maintaining the integrity of artistic endeavors moving ahead.

8. CONCLUSION

The integration of artificial intelligence (AI) into the realm of intellectual property rights (IPR) presents significant legal challenges, particularly concerning the issues of authorship, ownership, and patentability. Current copyright laws typically require human authorship for protection, leading to the exclusion of works created entirely by AI from copyright eligibility. This is similarly reflected in patent law, where inventorship is traditionally confined to natural persons. Notable cases, such as the DABUS applications, have underscored the complexities

surrounding AI's role in innovation, as courts in various jurisdictions have consistently rejected applications listing AI as an inventor.

The ambiguity surrounding ownership rights further complicates the landscape. Questions arise regarding whether ownership should reside with the AI's developer, user, or organization that owns the AI system. This uncertainty can lead to potential disputes and challenges in commercializing AI-generated inventions.

Moreover, the originality requirement for patentability poses additional hurdles. Determining whether an AI-generated invention is novel and non-obvious can be problematic, especially when AI systems are trained on existing data and may merely recombine known ideas. This raises critical questions about the standards of originality necessary for patent protection.

As AI technologies continue to advance, there is a pressing need for legal reforms that adapt existing IPR frameworks to accommodate these innovations. Stakeholders must engage in collaborative efforts to develop clear guidelines that recognize AI's contributions while ensuring equitable access to innovation. Addressing these challenges will be essential for fostering a balanced and effective intellectual property system in an era increasingly defined by artificial intelligence.[6]

[6] Praveen kumar Mishra, AI And The Legal Landscape: Embracing Innovation, Addressing Challenges ,live law, (19th jan. 2025, 6:00pm) , https://www.livelaw.in/lawschool/articles/law-and-ai-ai-powered-tools-general-data-protection-regulation-250673