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THE IP PROTECTION IN AI SYSTEMS: LEGAL ANALYSIS OF COPYRIGHT, TRADEMARK AND PATENT LAW

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I. ABSTRACT

Artificial Intelligence (AI) has significantly disrupted the conventional Intellectual Property (IP) laws and is presently considered as a novel source of creative and inventive contributions. The core problem originates from the fact that AI operates autonomously, thus, human authorship and creation are questioned along with issues of originality, ownership, and legal recognition. Both Indian and international statutory frameworks comprehend these issues through copyright, trademark, and patent law perspectives concerning AI, generated works and ideas. The foremost question in copyright law revolves around whether works created by AI can be considered as "original" and have an "author." In order to determine the level of legal protection for works generated by machines, different legislations such as the U.S. Copyright Act of 1976, the Indian Copyright Act of 1957, and respective International Agreements are referred to. Artificial Intelligence, in effect, is a vital factor in branding strategies, in the generation of trade names, and in the evaluation of distinctiveness and the risk of confusion in trademark law. The change in technological viewpoint is noticeable in the provisions of the EU Trademark Regulations, the Lanham Act of 1946 (U.S.), and the Indian Trademarks Act of 1999 which deal with the issues of goodwill, consumer protection, and enforcement. Patent law is at a crossroad where questions of inventorship and novelty arise as a result of inventions created by or with the substantial involvement of AI. The Patents Act, 1970 (India), the U.S. Patent Act (35 U.S.C.), and The European Patent Convention (EPC) are the legislative instruments through which the discussions on whether AI can be recognized as an inventor are happening. The TRIPS Agreement (1995) serves as a basis for these talks at the international level. The primary goal is to determine whether

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the AI, IP law intersection is so complicated that it cannot be regulated by the existing legal frameworks alone and thus requires a reformed, specialized legal approach.

II. KEYWORDS

Artificial Intelligence, Intellectual Property, Originality, Ownership, Patent, Trademark, Copyright

III. INTRODUCTION

A. Background of the study

One of the significant impacts of the rapid development of Artificial Intelligence (AI) on the field of intellectual property (IP) law was the challenge to the traditional concepts of authorship, originality, and ownership. The design of AI systems is such that they can work with a minimum of human intervention, which may be accessing the internet, downloading, or uploading data and information, creating new ideas, and innovative products. Consequently, these developments escalate the legal questions as to whether AI, generated works are qualified to be protected using the traditional frameworks of IP.

The key matter in copyright laws refers to the possibility of AI, generated works to be the legal criteria of "originality" and "authorship", ascribing the origin of creativity to humans only. Besides, there are specific laws, such as the U.S. Copyright Act of 1976[2], the Indian Copyright Act of 1957[3], and some international treaties, e.g., the Berne Convention.

Similarly, in the field of trademark law, the technology of AI is becoming a major player in the creation of brands and trade names. The major challenges in this area are raised in terms of the distinctiveness, consumer confusion, and the protection of goodwill for AI,

[2] *U.S. Copyright Act of 1976, Pub. L. No. 94-553, 90 Stat. 2541 (1976) (codified as amended at 17 U.S.C. §§ 101–810)*

[3] *The Copyright Act, 1957, No. 14 of 1957, India Code (1957), as amended by The Copyright (Amendment) Act, 2012, Act 27 of 2012*

assisted branding in conjunction with the likes of the EU Trademark Regulations, the U.S. Lanham Act (1946) [4]and India's Trade Marks Act (1999)[5].

Furthermore, Patent law also gets new complications, in particular, is the case of inventorship, the novelty, and the legal confirmation of AI as an inventor. The Patents Act, 1970[6] (India), the U.S. Patent Act (35 U.S.C.), the European Patent Convention (EPC), and the TRIPS Agreement (1995) are the instruments, which open a horizon for the analysis of the authenticity and validity of patents for AI, generated inventions.

The examination of AI in IP law is very major in grasping how present, day legal systems can adjust to the independent technological creativity of AI while sustaining a balance between the motivation to innovate and the assurance of legal stability.

B. Extent and Relevance

This research is centered around the legal protection of AI, generated works through the examination of copyright, trademark, and patent law, the three main branches of intellectual property law. It analyzes how the domestic laws and the international agreements cope with the problems caused by AI or where they fail to do so, thus pointing to the areas in which legal reform might be required.

Studying is important in many aspects:

1. **Legal Clarity:** It throws light on the issue of whether the current laws are sufficient in recognizing the works, inventions, and brands of AI, thus helping policymakers, practitioners, and scholars in understanding the legal gaps and ambiguities.
2. **International Perspective:** This research by looking at both Indian and international legal systems, supports the comparative understanding thus making it easier to align the AI, related IP norms across countries.

[4] *The Lanham Act (15 U.S.C. 1051 et seq.) (U.S.)*
[5] *The Trade Marks Act, 1999 (Act No. 47 of 1999, India)*
[6] *The Patents Act, 1970 (Act No. 39 of 1970, India)*

3. **Practical Implications:** The study informs artists, enterprises, and technology, originators of their rights and duties in case they employ AI in the process of creating or inventing.
4. **Future, Proofing IP Law:** The work is a contribution to the continuing discussion of how IP laws should be modified in order to keep up with the emerging technologies, thus making sure that legal systems are still responsive to the fast pace of technological progress.
5. ***Policy and Legislative Relevance:*** This research becomes more pertinent in view of the recent Indian policy changes that include the National Strategy for Artificial Intelligence (NITI Aayog, 2018) and the Digital India Act (draft, 2023), both emphasizing the need for the development of a responsible and innovation, friendly AI governance. Moreover, the Department for Promotion of Industry and Internal Trade (DPIIT) has, in 2024-2025, opened up discussions on AI and Intellectual Property Rights, thus the government's acknowledgment of the pressing necessity for the reform of IP laws in the age of AI. These changes point out the research's timeliness and its potential to contribute to the formation of future legislative trajectories in India.

Basically, the research points out the requirement of law that acknowledges the role of AI as a creator of intellectual property and at the same time keeps the equilibrium between giving incentives for further innovations and safeguarding the public interest which is the fundamental aim of any fair and advanced legal system.

C. RESEARCH OBJECTIVES

1. First, the intellectual property regulations in India and worldwide are examined not only by their appropriateness but also in their capability of securing inventions and works created by artificial intelligence.
2. A survey to explore whether AI, generated works could be categorized under the Berne Convention, the U.S. Copyright Act of 1976, and the Indian

Copyright Act of 1957, as well as to open up discussions of originality and authorship in copyright law.

3. An inquiry to zoom, in on potential scenarios where artificial intelligence impacts trademark law, more specifically, automated trade name selection, brand creation, distinctiveness, and consumer confusion according to the EU Trademark Regulations, the Lanham Act of 1946, and the Trademarks Act of 1999.
4. The venture of a comparison between the Indian Patents Act, 1970, the U.S. Patent Act, and the European Patent Convention to understand inventorship, originality, and the creative step in patent law by examining the case of AI systems working independently or substantially affecting the invention process.
5. A survey of how different international agreements, such as TRIPS and WIPO, managed treaties, structure the global rules for the protection of IP rights relating to AI, created works and inventions.
6. To locate and define those legal and policy issues in the framework of AI, driven intellectual property that are silent about ownership, responsibility, and enforcement of rights.
7. To present a genuine legal point of view as to whether there is a need for reforms and legislative interventions or the existing IP environment sufficiently copes with the complexity brought about by AI.

D. KEY RESEARCH QUESTIONS

1. Are content created by AI considered new and can they meet the authorship requirements of current copyright laws in India as well as in other countries?
2. What impact has the increasing use of artificial intelligence for automated trade name selection and brand creation had on the issues of customer confusion and distinctiveness in trademark law?

3. In view of the difficulties which AI systems cause, how are the concepts of inventorship, originality, and inventive step in patent law treated in the Indian, U.S., and European frameworks?
4. Do we need new legal systems, or do existing International Agreements like the TRIPS, Berne Convention, and WIPO treaties provide sufficient alignment for the protection of AI-generated works and ideas?

E. HYPOTHESIS

The current copyright, trademark, and patent laws in India and other countries are unable to sufficiently address the issues that AI has generated. These laws were designed in such a way that the creators and inventors are human beings. As a result, these sources lack sufficient details about the concepts of possession, uniqueness, inventiveness, or brand uniqueness in the context of AI. Hence, it is necessary to have legislation changes and global cooperation to make sure that AI, produced creations and inventions are appropriately guarded.

F. RESEARCH METHODOLOGY

This research is primarily based on doctrinal and analytical methodology. The study compares the laws of intellectual property in India, the United States, and Europe to examine how the copyright, trademark, and patent systems have been changed to accommodate AI-generated works and inventions. Besides, the study looks into the degree of worldwide harmonization by comparing international agreements like the European Patent Convention, the Berne Convention, and the TRIPS Agreement. The paper, however, is a critique and evaluation, focusing on the issues of originality, authorship, inventorship, and distinctiveness while discussing the challenges of artificial intelligence in intellectual property protection. Moreover, it also suggests the gaps in the law and underscores the areas where the changes may be necessary.

G. LITERATURE REVIEW

1. Books

- **The Reasonable Robot: Artificial Intelligence and the Law:** [7]Artificial intelligence is creating a broad spectrum of new legal problems related to the ways it performs the tasks that were usually attributed to human creativity and innovation. Abbott argues that in order for AI systems to be legally recognized, their creative outputs or inventions should be treated just like those of humans. In essence, the book points out that present intellectual property laws are failing more and more in their battles against the hurdles of AI-created works since they mainly assume human authorship and inventorship.

  The book, through focus on fundamental legal concepts such as originality, authorship, inventhip, and ownership, provides a framework for establishing how AI, generated works can be copyrighted, trademarked, or patented. By investigating the setting of AI technology versus existing IP legislation, it illumines the potential reforms and modifications needed to ensure that legal systems can continue to coexist with AI.

  This is a very significant piece of work that contributes largely to research with the provision of a comprehensive exploration of AI possibilities and challenges for the intellectual property law. It also marks a landmark addition to the knowledge and the amount of discussion of IP protection in AI systems.
- **Artificial Intelligence and Intellectual Property:** [8]To understand just how AI challenges and revolutionizes traditional IP frameworks, this study assembles inputs from the crème de la crème in academia and industry.

  The book delves into the main facets of the AI-IP interaction:

[7] *Abbott, R., The Reasonable Robot: Artificial Intelligence and the Law (Cambridge University Press, 2020)*
[8] *Lee, J.-A., Hilty, R. M. & Liu, K.-C. (eds), Artificial Intelligence and Intellectual Property (Oxford University Press, 2021)*

- **Technology, Business, and AI Fundamentals:** This part explains what artificial intelligence is, with a focus on the economic, and technical aspects of the case. The relationship between Artificial Intelligence and Patent Law is concerned with a variety of issues such as whether AI-generated inventions are patentable, the contribution of AI to the creative process, and the complexities in applying traditional patent standards to AI developments.
- **Artificial Intelligence and Copyright Law:** It goes into detail about authorship, originality, and the limits of protection helping to understand the complexities of copyright protection for AI-generated works. Artificial Intelligence and IP Administration: It refers to the new ways in which IP offices and administrators are adapting to the advent of AI such as by comprehensively studying AI-related applications and setting up strategies to handle IP created by AI.
- **Protection of and Access to Data:** The topic revolves around the importance of data for the development of AI, data protection regulations, access rights, and the difficulties in balancing privacy concerns with innovation. The Bigger Picture: The final part of the book depicts a wider point of view by exploring the ethical and societal issues of AI in the framework of the intellectual property law and by presenting the models for the future legal changes of the field. This is a thorough study of the link between AI and IP law, which shows the field of intellectual property the whole spectrum of possibilities and problems that AI offers.

2. Articles/Journals

- **Generative AI Has an Intellectual Property Problem:** [9]This research paper discusses the limitations of the legal and regulatory system in the face of an

[9] *Appel, G., Neelbauer, J. & Schweidel, D. A., 'Generative AI Has an Intellectual Property Problem' (7 April 2023) Harvard Business Review*

AI-generated content storm that is rapidly changing the landscape of intellectual property. The authors suggest that current frameworks for intellectual property, which were mainly set up for human creators, are being challenged by the introduction of generative AI tools that can create art, inventions, or even marketing materials without any outside input. The paper addressed issues of determining the right party for a content, originality to avoid plagiarism, infringement of intellectual rights on distribution of legal risks if AI-created outputs are similar to or are a direct reproduction of the already published works.

One of the main issues raised by AI-generated content that this study refers to is as to who the rightful owner is. The article also discusses the teaching problem of enforcing rights in the age of AI-automated systems working alone, as well as in collaboration with human input.

The article also talks about possible legislative consequences and the requirement for adaptable legal frameworks that could facilitate AI-led advancements while at the same time, safeguard the rights of the general public and human creators. By assessing the theoretical and hands, on difficulties, this article analyses the extent to which current legal provisions for intellectual property are adequate and if not, what changes would be necessary to facilitate the proper management, regulation, and control of AI, created works, inventions, and brand identifiers.

- ***Good Models Borrow, Great Models Steal: Intellectual Property Rights and Generative AI*:** [10]"Policy and Society" is an article, a peer, reviewed academic journal, that is recognized worldwide. This journal investigates various social challenges, governance, public policy, and law issues. It is a journal that helps in the analysis of current legal, social, and regulatory issues from a scientific point of view. The investigative study refers to the use of generative AI in the

[10] *Chesterman, S., 'Good Models Borrow, Great Models Steal: Intellectual Property Rights and Generative AI' (2024) 44(1) Policy and Society 23–37*

field of intellectual property rights as primary and questions traditional concepts of authorship, originality, ownership, and infringement through AI-generated content.

It points out that the current setting for copyright, patents, and trademarks law is extremely problematic when it comes to AI outputs. These are the outputs that are usually the best-quoted or the most influenced by the already published works. The report, however, also brings in the issue of ethics and policy. It emphasizes the need to find a good equilibrium between protecting the rights of human creators and at the same time, providing the necessary AI-based technological breakthroughs for innovation.

The research fundamentally highlights the insufficiency of current intellectual property laws as a major reason for the many issues that stem from the production of AI-generated content. Legislators and policymakers are urged to consider this issue as they are called upon to make changes and adjustments referring to the matter of IP rights in the AI era while concurrently ensuring that AI-driven innovations are properly governed.

3. Case Laws

- ***Thaler v. Comptroller General of Patents, Trade Marks and Designs, [2021]***[11]**:** In this legal proceeding, Dr. Stephen Thaler, the brains behind the **DABUS** artificial intelligence system, was looking for a patent to protect two ideas that the AI system had come up with without any help. The key question was if an AI system could be recognized as the "***inventor***" under UK patent law. The Court of Appeal confirmed the decision of the UK Intellectual Property Office by its ruling that, according to the currently effective Patents Act 1977, the only definition of an inventor is a natural person.

[11] *Thaler v Comptroller General of Patents, Trade Marks and Designs, [2021] EWCA Civ 1374 (Court of Appeal, UK).*

The court emphasized that the law required inventorship to be linked to a human, and that AI could not be considered a putative inventor although it had the ability of spontaneous inventions. This case is very closely related to the topic of this study as it highlights the problems that AI-generated inventions pose for the current patent framework. It gives the legal dispute surrounding ownership, inventorship, and the recognition of AI as a separate legal entity.

The decision paves the way for these debates to continue on whether there is a need for changes to keep the AI-generated ideas safe and it is an example of how the regular IP laws are not enough when it comes to AI-generated works. The Thaler case is thus a landmark case which is used by the present research to trace out the issues of patent law and identify how courts conceive inventorship with the advent of AI technology and suggest possible legal adaptations.

- **Andersen v. Stability AI Ltd., 2024**[12]*:* Sarah Andersen, Kelly McKernan, and Karla Ortiz were a few of the visual artists behind the lawsuit against Stability AI Ltd. - filed as a class-action - that broke new ground. The lawsuit states that the company unlawfully reproduced their copyrighted materials to train its AI image generation model, Stable Diffusion, without their permission and consent. These artists maintained that copyright of the AI-generated outputs was violated as they resembled the original works very much.

  On August 12, 2024, the U.S. District Court decided to reject the allegations under the Digital Millennium Copyright Act (DMCA), but at the same time, it allowed the plaintiffs' claims of direct copyright infringement and incitement of infringement to go forward. While the court is skeptical whether the AI itself can be the source of direct infringement, it still points out that support for AI models capable of creating derivative works may be considered as inducement.

  This case is highly relevant to studies in AI that deal with the protection of IP as it places a strong emphasis on the new legal issues that AI technologies have brought

[12] *Andersen v. Stability AI Ltd., Case No. 3:2023cv00201, United States District Court, Northern District of California, August 12, 2024*

in. Moreover, it emphasizes the accountability of the AI creators to avoid violation of rights and also provides an instance of how conventional copyright regulations are confronted with an AI, generated scenario. The judgment discloses significant directives for safeguarding artists' creations when employed in AI training, thereby opening up conversations on possible legal amendments in copyright, patent and trademark law for the field of AI, generated works.

IV. CHAPTER 2: FOUNDATIONAL MODEL OF AI & IP

A. Examining the role of AI in driving Creativity and Innovation

Artificial Intelligence (AI) refers to the advanced concepts, models, and computational methods, which are a byproduct of computer science, that enable machines to carry out tasks that normally require human intelligence (Russell & Norvig, 2021). One of the means by which AI demonstrates its immense potential in the creative field is through the Generative AI systems corp, such as ChatGPT, DALL-E, Midjourney[13], and GitHub Copilot, which are able to come up with fresh and unique ideas without human help. It goes without saying that these machines have the capacity to produce original literary works, pieces of art, musical scores, computer programs, inventions, and design solutions without the need for human intervention.

Conventionally, digital instruments operate as helpers that are under the control of humans; however, AI models are said to be on the creative side of the spectrum since they can act as autonomous or semi, autonomous creators. It is this changing interaction scenario that calls into question the traditional concepts of authorship, creativity, and even originality from the point of view of intellectual property law.

B. Content Generation without Human Input

The ability of AI systems to come up with creative works without any kind of help from humans is indeed a source of a lot of perplexing questions that revolve around authorship

[13] *Dua, Rishi & Nagpal, Dr. Kritika, "Artificial Intelligence and Intellectual Property Challenges", International Journal of Creative Research Thoughts (IJCRT), Vol. 13, Issue 4 (April 2025) (ISSN: 2320-2882), Paper No. IJCRT25A4712*

and originality. For instance, DALL- E can produce new visual pieces based on the textual input given, while ChatGPT can provide articles or poems that look like they were penned by humans. The above, mentioned breakthroughs have soiled the difference between human and AI creativity and copyright regulation which was once a domain of human creativity now being challenged. Moreover, in the case of scientific research and innovation, AI is able to quickly come up with multiple hypotheses and design variations that in effect, shorten the time that was normally needed for experimentation[14].

C. Creative Use of Data

The creativity of AI also comes from the fact that it is capable of comprehending vast data sets which enable it to find patterns, relationships, and deviations. Using the same technology, they can also create new concepts or answers that might not even have been thought of by human creators. Such data, centric creativity is gradually opening new avenues in tech design, music creation, and algorithmic art, where machines are not mere tools but active innovators.

D. AI as a Human Creativity Enhancer

As an AI, powered collaborative tool, technology has the potential to uplift human artistic ability by offering fresh concepts, and also by improving and optimizing the resulting works. An example of this is the way GitHub Copilot helps software developers by providing them with code that is relevant to the context and, as a result, increases both their productivity and the level of innovation. On the other hand, Midjourney is of great assistance to the creative artists and designers in that it provides extremely quick and varied visualization of the concepts that are still in their abstract forms. To put it simply, AI performs the role of a creative amplifier insofar as the imaginative capacity of human beings is extended and the duration of making is decreased.

[14] *OECD, What Technologies Are at the Core of AI? An Exploration Based on Patent Data, OECD Artificial Intelligence Papers No. 62 (Nov. 2023)*

AI's rising capacity to independently produce creative and innovative works has sparked a heated debate about the necessary changes in intellectual property (IP) law. The existing legal regimes, which are based on the assumption that there is a single human author and inventor, are increasingly having difficulty in answering the question of whether non, human agents should be accorded the status of creators or inventors under the laws on copyright, patent, and trademark and if yes then how.

E. Traditional IP concepts

One of the major features of intellectual property (IP) laws in the past has been the protection of novelty, human inventiveness, and human creativity in the commercial sphere. The principles underlying the idea are:

1. Originality

Protecting novelty has always been a fundamental part of the intellectual property (IP) laws that are additionally aimed at bringing human inventiveness and creativity into the commercial sphere under one protective framework. Of all these, originality lies at the very foundation of copyright protection. The principle of originality entails that the author's work must be the result of the author's skill, labor, and judgment which reflects at least some intellectual and creative effort.

Originality in the classical sense of law has been considered as an aspect that is naturally connected to the authorship of humans. The reason lies in the fact that copyright law in India as well as internationally is based on the idea of a human creator who uses his mental faculties to create an expressive content. Nevertheless, the introduction of artificial intelligence (AI) that can create literary, artistic, and musical works without human help challenges this traditional interpretation from the legal perspective.

What is being questioned is whether the works created by AI without human help and only by following the instructions of the algorithm and the pre-trained data models can be original according to the law as well as the court's criteria. Indian copyright, law court cases have defined originality quite clearly in different judicial decisions, the most

noticeable being the *Eastern Book Company v. D.B. Modak, (2008)*[15], where the Supreme Court of India implemented the "modicum of creativity" standard. The Court stated that the minimal degree of creativity should be evident in the work to be able to classify it as original and that works that are the results of mere mechanical skills, or labor cannot.

Before that, "sweat of the brow" doctrine, "sweat of the brow" doctrine, an idea based on the English common law, which gave preference to the artist's labor and effort rather than to the creative aspect (*Macmillan & Co Ltd v. K.J. Cooper, AIR 1924*[16]), was the main concept in Indian courts. Nevertheless, the decision in D.B. Modak pointed to a closeness of Indian copyright law to the US Supreme Court decision in *Feist Publications Inc. v. Rural Telephone Service Co., 499 U.S. 340 (1991)*[17] stating the requirement of "independent creation plus a modicum of creativity." The Indian court moved away from a standard largely dependent on the elocution of the labor by the author and therefore towards one that put more emphasis on the inventive aspect of copyright. These AI, generated works principles application brings with it some intricate questions:

- Would it be possible for an AI operating system that does not have a conscience, an aim, or a human intellect to be deemed as one that makes use of "skill and judgment"?
- And if the answer is no, would the products of the system ever be capable of fulfilling the "modicum of creativity" criteria that originated in D.B. Modak?
- Should the concepts of authorship and originality be abandoned in the context of an autonomous machine creating something or should the protections granted by law be extended only to human, guided inputs and selections?

These issues that have not yet been solved point to the urgent necessity of judicial overhaul and doctrinal clarity for adaptation of the copyright systems to the world of AI,

[15] *Eastern Book Company v. D.B. Modak, (2008) 1 SCC 1*
[16] *Macmillan & Co. Ltd. v. K. & J. Cooper, AIR 1924 PC 75*
[17] *Feist* Publications Inc. v. Rural Telephone Service Co., 499 U.S. 340 (1991)

powered creativity that would still serve as a tool for the maintenance of the innovator incentive and the respect of human intellectual contribution.

2. Authorship

Authorship is a copyright concept in which law specifies the person or legal entity that holds the first rights over a creative work. It is the basis of linking ownership, moral rights, and economic rights to intellectual property. Both the Indian and the U.S. copyright law mechanisms emphasize the point that the creator has to be a human for the creative work to be given copyright protection.

In the Indian law, an author is identified in Section 2(d) of the Copyright Act, 1957[18] as:

"Author" means,

- With respect to a literary or dramatic work, the author of the work;
- With respect to a musical work, the composer;
- With respect to an artistic work other than a photograph, the artist;
- With respect to a photograph, the one who clicks the photograph;
- With respect to a cinematograph film or sound recording, the producer; and
- With respect to any literary, dramatic, musical or artistic work that is computer, generated, the person responsible for the creation of the work.

The very significant single point in the domain of AI, generated works is the addition of clause (vi), the one who causes the work to be created." It indicates an effort by the legislature to deal with the issue of authorship in computer, generated works, however, the phrase is still quite unclear when it comes to self, sufficient AI systems.

The crux of the problem with the interpretation is the question of who is the one that "causes" the work to be created when the AI does not require or minimally requires human input. They may be whoever claims the right:

[18] *The Copyright Act, 1957, No. 14 of 1957, India Code (1957), s. 2(d)*

- The programmer who built the algorithm.
- The user who submitted the prompt or parameters; or
- The company (for instance) that either has or uses the AI system.

However, none of these characterizations adequately correspond to the definition of author in the statute, which assumes that the author is a person who made an intellectual contribution and exercised creative judgment. As a result, there is a legal gap, that outputs of AI exist, yet under current law, a legally recognized author cannot be identified.

While the U.S. Copyright Act of 1976 limits copyright to "original works of authorship fixed in any tangible medium of expression[19]", the U.S. Copyright Office has firmly indicated that non, human generated works, including those from AI, are not capable of registration and thus confirming the "human authorship" requirement. [20]

Therefore, the Indian and U.S. legislations both rest on the idea that authorship is a human attribute, thereby leaving the AI, generated works without the law protection kind of zone. Such a state of uncertainty prompt first lawmakers questions of lawmaking urgency:

- Whether the "person who causes the work to be created" in Section 2(d)(vi) be the one to include AI operators or developers?
- Or should India adopt a policy, based approach that recognizes AI, assisted outputs as a separate category requiring sui generis type of protection?

Either legislative coherent explanation or judicial interpretation of Section 2(d) will be crucial in determining the manner in which Indian copyright law is going to be shaped by the new era of autonomous creative technologies.

[19] *U.S. Copyright Act of 1976, Pub. L. No. 94-553, 90 Stat. 2541 (1976) (codified as amended at 17 U.S.C. §§ 101–810)*
[20] *U.S. Copyright Office, Compendium of U.S. Copyright Office Practices, 3rd ed., § 313.2 (2023)*

3. Inventorship

The term inventorship in patent law is the designation to those who had contributed to the conception of the invention. Patents have always allowed for only human inventors. The birth of AI, generated inventions has brought about legal confrontations everywhere with the example of the DABUS cases in the European Patent Office and the U.S. Patent Office, where the issue of whether AI systems could be the named inventors popped up the most.

4. Distinctiveness

Distinctiveness is the base of trademark law as it assures that the marks indicate the origin of goods or services in a unique way. AI, supported branding can come up with unprecedented marks and brand personalities; still, the creations have to be in accordance with the guidelines that are in place for consumer protection, meaning, there would be no confusion, deception, or weakening of the favor. The India's Trade Marks Act, 1999, the EU Trademark Regulation, and the U.S. Lanham Act, 1946, are examples of statutory frameworks facing the challenge of accommodating these forms of AI.

F. The Evolution from Human based IP to AI-Produced Outputs

1. Historical Perspective

The IP law has been a human odyssey for centuries through the peaks of creativity, innovations, and trade. One of the first frameworks was the Statute of Anne (1710) [21]which introduced the concept of authors' rights to copyright law and modern patents and trademarks regulated by the Indian Patents Act (1970), the U.S. Patent Act (1952), and the Lanham Act (1946) gave inventors and brand owners certain legal rights.

2. AI-Driven Disruption

AI disputes historical beliefs by creating art, inventions, and brands without almost human input. This brings up a number of some very important legal issues:

[21] *Statute of Anne, 8 Ann., c. 19 (1710)*

- **Copyright Law:** Can AI, generated content be considered as new and can AI be the author? Different jurisdictions have different interpretations of this. As an illustration, the rules of the U.S. Copyright Office do not allow the granting of copyright to works created solely by AI[22], while the UK instructions permit some computer, generated works to be acknowledged by the law as per Sections 9(3) and 178 of the Copyright, Designs and Patents Act 1988[23].
- **Patent Law:** Court confirmation of AI as an inventor is still far away. The DABUS cases demonstrate the variability of global positions with the European Patent Office and the U.S. Patent Office policy of artificial intelligence not being given the status of the inventor.[24]
- **Trademark Law:** Brand names created with the help of AI continue to pose new difficulties in terms of making sure of their uniqueness and at the same time not deceiving the consumers and this might require the possibility of reinterpreting the legal standards used in this area.

3. Legal and Policy Implications

- It is a very pressing issue to determine if the current IP arrangements would still be sufficient to cover AI, generated inventions or if there would be an absolute need for reforms.
- The focus of this controversy is how to keep the equilibrium between the promotion of new ideas and the maintenance of legal clarity and public interest.
- The emergence of AI makes one wonder whether IP law should treat AI as a co, creator, just a tool, or if there is a need for new sui generis rights for machine, generated works.

[22] *U.S. Copyright Office, Compendium of U.S. Copyright Office Practices, 3rd ed., § 313.2 (2023)*
[23] *Copyright, Designs and Patents Act 1988, c. 48, §§ 9(3), 178 (UK)*
[24] *Thaler v. Comptroller General of Patents, Designs and Trade Marks [2021] EWCA Civ 1374; see also European Patent Office, Decision J 8/20 (DABUS), July 21, 2021*

V. CHAPTER 3: COPYRIGHT AND AI

A. Indian & International law Legal Framework

The Indian Copyright Act, 1957 is the legislation that defines "*an author*" as the one who comes up with the work (Section 2(d)) and also mentions that protection is given to the works which are original (Section 13). However, the Act does not clearly cover AI, generated works, thus there is a certain amount of vagueness in the matter of rights when an AI creates a work in a fully autonomous way.

On the global front, the U.S. Copyright Act of 1976 is quite similar in nature as it specifies that a human author should be the one to create the work for it to be eligible for copyright protection. The US Copyright Office, by and large, takes the stance that it will not grant copyright in works that are produced entirely by machines without any human intervention. [25]The Berne Convention (1886, revised 1971) is a treaty under which the member states are required to provide the protection of works of authorship, however, it implicitly presupposes human authorship, thereby causing difficulties in the case of AI, generated outputs.

WIPO remarks that AI might be a great help for the human in the creative processes, nevertheless, copyright is difficult to reconcile with the cases of autonomous AI outputs.

B. Authorship, originality, AI-generated works

In traditional copyright law, protection is tied to human authorship and the concept of originality, which is a work that reflects the creator's skill, effort, and judgment. The rise of AI, generated works poses two main questions:

- **Authorship:** If anyone, who should be considered the author, the AI, the programmer, or the user?
- **Originality:** Are algorithm, generated outputs that heavily depend on pre-existing works or training data be regarded as "original"?

[25] *U.S. Copyright Office, Compendium of U.S. Copyright Office Practices, 3rd ed., § 313.2 (2023)*

These questions are at the heart of the ongoing discussions about whether or not AI, made works should be given legal status or they should be left beyond the reach of copyright law.

C. Key Judicial precedents

- **Naruto v. Slater**[26]*:* This case was about a famous wildlife photographer David Slater who let his camera go off in Indonesia. A monkey named Naruto took over the camera and captured a series of pictures which were later called the "monkey selfies". People for the Ethical Treatment of Animals (PETA) filed a lawsuit claiming that Naruto was the rightful copyright owner of these pictures. They basically said that since the monkey was the one taking the pictures, it should be recognized as the "author" under the U.S. Copyright Act of 1976. However, the Ninth Circuit Court of Appeals did not buy this argument and totally dismissed it. According to the court, only those entities with human characteristics, persons, can have the right of copyright authorship under the Act. The opinion pointed out that Congress has not provided for entirely different living beings or even animals to get copyright protection. Still the case is cited time and again in the discussions about AI and copyright. Just like animals, AI systems are not considered as legal persons and do not have any independent rights under the present U.S. copyright laws. The Naruto example makes the human, centric American copyright law approach very clear and thus it becomes a tough task for proponents to put forward the argument of granting copyright to AI, generated works.
- **Infopaq International A/S v. Danske Dagblades Forening**[27]**:** The Infopaq case concerns a company in Denmark that was doing the scanning and storing of short 11, word extracts from newspaper articles without getting the permission of the publishers. The main issue before the Court of Justice of the European

[26] *Naruto v. Slater, 888 F.3d 418 (9th Cir., 2018, U.S.)*
[27] *Infopaq International A/S v Danske Dagblades Forening, Case C-5/08, [2009] ECR I-6569 (CJEU)*

Union was whether such brief fragments could be considered "reproduction" under EU copyright law. The Court found that even small parts may be kept if they include the author's intellectual creation. The decision was very important because it specified the level of originality in EU copyright law as depending on the author's personal intellectual contribution, no matter the length or the range of the excerpt in question. Infopaq signifies that human intellectual input is imperative for the creation of something new. As far as AI, generated content is concerned, which in most cases lacks direct human creative input, this precedent leads to the questions if these works can meet the originality requirement for copyright protection.

VI. CHAPTER 4: TRADEMARK AND AI

A. AI in branding and trade name creation

Artificial Intelligence (AI) has reshaped to be one of the key tools for company's branding which encompasses brand name selection, consumer marketing strategies, and many other areas. Just by a few commands, AI, powered tools can brainstorm and generate countless brand names, brand personalities, visually attractive slogans, and other brand identities.

Nevertheless, these AI, created marks socially sound or visually similar to the already registered ones may bring legal disputes due to the risk of trademark infringement. According to the Indian Trade Marks Act, 1999, these kinds of situations may even be considered as the absolute grounds for refusal of registration under ***Section 9***, which enumerates the prohibition of registration of marks that lack distinctiveness or are deceptive as well as the relative grounds for refusal under ***Section 11***, which concerns conflicts with earlier trademarks[28].

[28] *The Trade Marks Act, 1999, No. 47 of 1999, India Code (1999), ss. 9, 11*

On top of that, AI devices usually take their reference from the web for the work to be done, thus the trademarks generated may have some elements from the existing trademarks which in turn causes infringement and dilution issues.

One more issue that has not been resolved is the question regarding the ownership of AI, generated marks. As trademarks, under existing regulations, require a "person" to file and use them, the user, the developer, or the AI system, the one to be credited with authorship and ownership of the newly created mark, is not clear. Without clear contractual provisions, this doubt may lead to disputes over registration, usage rights, and enforcement in the absence of rights granted in contracts.

Therefore, the employment of AI in branding, albeit the marketer's revolutionary tool, increases the risks of trademark law breaches, namely those that concern clearance, ownership, and consumer deception.

B. Comparative study of Trademark Law: India, EU and United States

- **India:** The Trademarks Act, 1999, India, lays down the standards that need to be met by trademarks in order to be registered, mainly through Sections 9 and 11. Section 9 prohibits the registration of marks that are common, highly descriptive, or simply lacking in distinctive features. On the other hand, ***Section 11*** stops marks which are similar to already existing registered ones from causing confusion. For AI, generated trade names, this implies the following: Firstly, it is necessary for the name to be new, not only a slight variation of common words or phrases. Secondly, such a name should not be so similar to that of other existing trademarks that it is easy for an average consumer to mislead. The law fairly guards reputation by common law "passing off" actions as well, meaning that even unregistered marks having established goodwill are protected from imitation. The Supreme Court decision in ***Amritdhara Pharmacy v. Satya Deo Gupta*** [29] is the foremost precedent. The case was about a conflict

[29] *Amritdhara Pharmacy v Satya Deo Gupta, AIR 1963 SC 449.*

between two medicine brands, i.e., "Amritdhara"and "Lakshmandhara". Besides the spelling, the Court also stressed the importance of the overall phonetic impression and consumer perception. If the average consumer is confused even by only the phonetic similarity of the names, then trademark infringement is the claim with the highest probability of success. Generally, Indian law of trade mark (including those that are AI, generated) requires trade names to be original and they should not be similar to a degree that would lead to confusion of the consumers either at the sight or sound of them.

- **European Union:** One of the most significant features of the European Union trademark law, as defined in Regulation (EU) 2017/1001, is the focusing of the marks' inherent distinctiveness. In essence, very descriptive trademarks and those that may mislead the public are prohibited from being registered. The "***likelihood of confusion***" test represents the "core" of the EU approach. This test is carried out from the perspective of the average consumer. The best known instance concerning this subject matter is the judgment in ***Sabel BV versus Puma AG*** [30]**.** The dispute in the litigation was about the defendant Puma who wanted to stop the plaintiff Sabel from using the image of a cat leaping in the logo, stating that a confusion with Puma's already known symbol would arise. The Court of Justice of the European Union (CJEU) decided that the likelihood of confusion examination should be broad in scope and it should not only consider the visual similarity but also the phonetic and conceptual similarities of the signs. Where such a principle may be most relevant is the AI, generated content field, whereby machines can now come up with numerous logos, symbols, and trade dresses within a very short time. Thus, the risk of a mark being conceptually or even visually similar to an already existing one has gone up dramatically. According to Regulation (EU) 2017/1001 on the European Union Trade Mark (EUTMR), a trademark can be refused registration if it is without

[30] *Sabel BV v Puma AG, C-251/95 (Court of Justice of the European Union, 1997)*

distinctive character (Article 7) or if there is a possibility of confusion with an earlier mark (Article 8)[31]. Therefore, to conceptual similarity alone may be enough to refuse trademark protection under EU law even if the marks look differently, which is a standard that raises the main questions about the regulation of AI, generated trademarks.

- **United States:** Regulations on trademark protection in the United States are set out in the Lanham Act, 15 U.S.C. 1051 et seq. Under the law, the marks are categorized based on their distinctiveness from a range of features: no protection is given to the most generic terms, while descriptive marks require proof of "secondary meaning" to be allowed. The highest level of protection is reserved for suggestive, arbitrary, and fanciful marks, which are by their nature distinctive ones. Courts decide if the two marks are confusingly similar by examining various factors under the "likelihood of confusion" test, which is specified in 15 U.S.C. § 1114[32]. The test is not strictly defined but rather refers to a qualitative evaluation of numerous situational factors, such as the distinctiveness of the mark, similarity of the marks, closeness of the goods, real confusion, and the infringer's intent. It becomes clearer through critical instances of this approach: In ***Polaroid Corp. v. Polarad Elecs. Corp.*** [33]**,** the issue was the similar names (Polaroid) and (Polarad). The opinion laid down a multifactor test that is now widely known: the point of the mark, the similarity of the marks, the nearness of the articles, sources of misunderstanding, the purpose of the parties actions, were among the points of consideration, etc. Such a system of thought is still very much present even in cases of AI, invented trademarks where algorithmic risk calculations might come into play. Another prominent, ***Two Pesos, Inc. v. Taco Cabana, Inc.*** [34]**,** was a lawsuit over the trade dress of

[31] *Regulation (EU) 2017/1001 of the European Parliament and of the Council on the European Union Trade Mark, arts. 7–8, 2017 O.J. (L 154) 1*
[32] *Lanham (Trademark) Act, 15 U.S.C. § 1114 (likelihood of confusion)*
[33] *Polaroid Corp v Polarad Elecs. Corp., 287 F.2d 492 (2d Cir 1961)*
[34] *Two Pesos, Inc v Taco Cabana, Inc., 505 US 763 (1992)*

restaurant decor. The Supreme Court decided that inherently distinctive trade dress can be protected even if it does not show evidence of secondary meaning. This concept is the same for a new situation like AI, produced trade dress or the design of the digital store that is absolutely different: if it is different from the ordinary and has its unique features you can still protect it with the Lanham Act. Basically, U.S. trademark law provides the necessary protection from the point of view of the importance of the marks and the trade dress that are at least moderately distinctive. Courts employ a complex multi, factor approach ***to come to a conclusion on the likelihood of confusion and the eligibility for protection.***

C. Assessing Distinctiveness and the risk of Consumer Confusion

1. Distinctiveness Challenges

For a trademark to be protected under the law it must be able to identify in which way a product or service is uniquely one source. AI could produce totally different trademarks but, on the other hand, these might be words that are descriptive linguistically, culturally common, or very similar to already existing ones. For instance, an AI tool generating names based on product descriptors may repeatedly output non- distinctive, descriptive terms like “FreshGlow Soap”or “QuickClean Detergent”, which would fail statutory requirements under Section 9 of the Indian Act or equivalent provisions elsewhere.

2. Consumer Confusion

The likelihood of confusion doctrine, which is the main point of trademark law all over the world, is still in use. The AI, generated marks create more confusion as they do not have a proper clearance process and thus there is a higher chance of overlap of the marks. The main reasons for this higher risk are:

Scale of Generation: Without adequate clearance, numerous names/logos could be dropped which would make it more probable to have overlapped.

Phonetic and Conceptual Similarity: The AI method that is commonly used to come up with new trademarks applies the principles of already existing trademarks. From that fact, it results that AI creates names that are phonetically and conceptually similar.

Algorithmic Bias: If the dataset used for the AI training consists of popular brands, the result will be the AI releases brand names that look similar to the existing ones thus leading to an incorrect connection between two unrelated companies.

Case Example for Confusion:

Cadila Health Care Ltd. v. Cadila Pharmaceuticals Ltd.[35]

Facts: Both entities were manufacturing drugs aimed at curing malaria. The plaintiff was promoting its medicine under the brand name "Falcigo" whereas the defendant was promoting its medicine under the brand name "Falcitab". The issue at stake was if the likeness of the names could cause the mix, up of users to the extent that they confuse the two products, particularly since both were drugs.

Judgment: The Supreme Court decided that even more care should be taken when dealing with pharmaceutical trademarks, as confusion in medicinal products can result in very serious consequences. The Court found that the test of misleading similarity should take into account phonetic similarity, the characteristics of the products, and the purchasers' class. The degree of similarity, thus, may be sufficient for the issuing of injunctions even in small quantities in the case of medicines.

The decision imposes a stringent norm whereby AI, generated brand names in sensitive sectors such as pharmaceuticals have to be subjected to thorough legal checks since the possibility of consumer confusion, leading to health and safety risks, cannot be allowed.

Consumer Protection Angle:

Protection from the law of trademarks is not only about safeguarding a company's goodwill but also about ensuring that consumers are not misled. AI, generated marks

[35] *Cadila Health Care Ltd v Cadila Pharmaceuticals Ltd., (2001) 5 SCC 73*

that closely mimic established brands (e.g.,(Nikee) for sportswear or (Applee) for electronics) may deceive consumers into associating with genuine marks. In order to check whether confusion occurs, courts apply the "average consumer" test, which is still completely valid when it comes to AI.

VII. CHAPTER 5: PATENT LAW AND AI

A. Indian Patent Framework and International Perspectives: U.S. and EPC

Principally, *the Patents Act of 1970*, as amended notably in 2005, determines India's style of patent law, specifically in those matters concerning artificial intelligence. Section 2(1)(j) of this Act declares that an invention, to be considered for patent protection, has to be new, non-obvious, and capable of industrial application. It is quite a stringent set of standards on which the Act's requirements, in fact, act as a sort of gatekeeper that honors only those inventions that are both genuinely innovative and useful with the least way out.

In the case of inventorship, Section 6(1) limits the right of applying for the patent to only one "true and first inventor" which the law defines as a natural person. This, in effect, means that AI systems cannot be allowed to be the inventors. Such a stance has been confirmed in 2020 when the Indian Patent Office denied the applications ((Application Nos. 201917019159 and 201917019168)) of the AI system "DABUS" being the inventor, thus making India consistent with other countries in the global consensus.[36]

Another pivotal restriction is introduced by Section 3(k), which removes from the patentability mathematical and business methods, computer programs per se, and algorithms. This is very much in line with the AI field, most of the AI models are essentially the algorithms and the computational processes. Consequently, the patenting of AI-based inventions in India is fraught with legal obstacles of various kinds.

[36] *Indian Patent Office, Decision on Patent Applications Nos. 201917019159 and 201917019168 (In re DABUS), 2020*

Despite this, there is a difference in detail as to how these are regulated. The Controller General of Patents has declared that computer-related inventions (CRIs) which create the technical progression or which deal with hardware and that have clear industrial applicability may still be classified as patentable. This implies that the Act, while it is restrictive, also allows certain computer-implemented innovations to meet the qualifications, provided they satisfy the technical and practical criteria set out in the Act.

To sum it all up, the Indian legal system currently does not accept AI systems as inventors and is careful about giving patents for algorithm-based inventions. However, there is still some leeway for computer-related inventions provided that they can demonstrate real technical progress and be of industrial use.

1. U.S. Perspective

According to the Patent Act (35 U.S.C.) in the U.S., an "inventor" is defined as a person who, by their own single, handed efforts, either makes or discovers a new and useful process, machine, manufacture, or composition of matter. When the case (DABUS) was being dealt with in 2020, the U.S. Patent and Trademark Office (USPTO) [37]rejected the concept of AI as an inventor, thereby physically existing ones only were considered as the inventors in accordance with 35 U.S.C. 100(f) and 115.

2. European Perspective European Patent Convention (EPC)

The EPC (Articles 52 57) is a member states' patent law of the European Patent Organization which is based on the European Patent Convention. The EPO also rejected the DABUS applications at the same time as the USPTO, the inventor as the reason was indicated[38]. However, the EPC does not eliminate AI, supported inventions; in those cases, the patents can be granted if the human contribution to the inventive concept is clearly defined.

[37] *In re Application of Stephen L. Thaler, Decision on Petition (U.S. Patent and Trademark Office, 2020)*
[38] *J 8/20 (DABUS), Legal Board of Appeal, European Patent Office (21 December 2021)*

All three jurisdictions (U.S., India, and the EU) stipulate that inventors should be human, but there is a significant disagreement among the policy circles which is seemingly tipping towards acknowledging AI, assisted rather than AI, generated inventions. The law is laid down in such a way as to allow the possibility that human intervention is essential for the creation of the product and so the human person is the one to be held accountable.

B. AI –Driven Inventions: Legal Perspectives on Novelty and Inventive step

1. AI as Inventor

Artificial intelligence systems such as DABUS, ChatGPT etc, are capable of creating original works of invention on their own. On the other hand, the patent regimes in almost every country are confronted with a problem: the one of inventorship is closely linked to the concepts of moral and legal accountability, things AI does not have.

The "*person skilled in the art*" test of Indian and other international patent regulations presupposes human creativity and discretion, thus making it difficult to assign inventorship to AI.

Moreover, this also implicates Indian laws such as Section 2(1)(y) (person definition) and Section 6(1) (right to apply), both of which are not compatible with the concept of AI. Therefore, AI could be considered as a support instrument for a human inventor rather than a fully independent creator.

2. Novelty and Inventive Step

By leveraging tremendous combinations of historical data, AI poses a challenge to the traditional legal definitions of novelty (Section 2(1)(l)) and inventive step (Section 2(1)(ja)). At first glance, the outputs made by AI may seem to be new, yet upon further inspection, they are often mere extensions of the existing datasets, leaving one to wonder if the threshold of 'non, obviousness' they comply with.

In the case of *Bishwanath Prasad Radhey Shyam v. Hindustan Metal Industries* [39], the Supreme Court of India highlighted that technical progress and socio, economic importance, not just the technology becoming a bit better, are the features of a patentable invention, criteria which are also valid for AI, generated inventions.

Concurrently, in the EPO's Guidelines for Examination (2022)[40], AI, related inventions must show a technical contribution outside the scope of the algorithmic or mathematical modeling area to meet the requirements for inventive step.

C. Global Legal Challenges

1. Pinpointing the extent of human input versus AI independence in the creation process.
2. Evaluating novelty under the condition that AI uses already available public data.
3. Concerns about ethics and accountability when it comes to the issue of granting rights to non, legal entities.

D. Gaps in Policy and Judicial Interpretations

1. Policy Gaps

- **Inventorship Definition:** The current acts and standards around the globe are unclear about AI, which means it is not clear if AI will be an inventor or co, inventor of the invention in question.
- **Ownership and Accountability:** In the case where an AI system develops a product on its own, there has been no discussion on the point of who (developer, programmer, or user) should be the owner of the invention.
- **Disclosure Standards:** One of the main reasons for patent applications involving AI is the lack of a detailed and clear disclosure of how the AI has

[39] *Bishwanath Prasad Radhey Shyam v Hindustan Metal Industries, (1982) 1 SCC 728*
[40] *European Patent Office (EPO), Guidelines for Examination in the European Patent Office (2022)*

helped innovate the product, which leads to issues related to sufficiency and reproducibility of the invention.

- **Algorithmic Bias and Data Use:** The use of biased data in AI inventions can result in the raising of both ethical and legal issues, of which the originality and fairness possibly being the most important ones.

India is lagging behind in AI and IP policy; however, the NITI Aayog41 "National Strategy for Artificial Intelligence" (2018) has anticipated the requirement of IP Dynamics To Suit AI innovations.

E. Judicial Perspectives

Judicially, courts and patent offices have kept a focus on the role of humans:

Thaler v. Comptroller General of Patents, Trade Marks and Designs, [2021][42]***:*** In this legal proceeding, Dr. Stephen Thaler, the brains behind the DABUS artificial intelligence system, was looking for a patent to protect two ideas that the AI system had come up with without any help. The key question was if an AI system could be recognized as the "***inventor***" under UK patent law. The Court of Appeal confirmed the decision of the UK Intellectual Property Office by its ruling that, according to the currently effective Patents Act 1977, the only definition of an inventor is a natural person. The court emphasized that the law required inventorship to be linked to a human, and that AI could not be considered a putative inventor although it had the ability of spontaneous inventions.

This case is very closely related to the topic of this study as it highlights the problems that AI-generated inventions pose for the current patent framework. It gives the legal dispute surrounding ownership, inventorship, and the recognition of AI as a separate legal entity. The decision paves the way for these debates to continue on whether there is a need for

[41] *NITI Aayog, National Strategy for Artificial Intelligence: #AIforAll (New Delhi: Government of India, June 2018)*

[42] *Thaler v Comptroller General of Patents, Trade Marks and Designs, [2021] EWCA Civ 1374 (Court of Appeal, UK)*

changes to keep the AI-generated ideas safe and it is an example of how the regular IP laws are not enough when it comes to AI-generated works.

The Thaler case is thus a landmark case which is used by the present research to trace out the issues of patent law and identify how courts conceive inventorship with the advent of AI technology and suggest possible legal adaptations.

Thaler v. Vidal [43]***(2022, U.S.),*** AI cannot be an inventor.

EPO DABUS decisions (2021), Inventorship is limited to a human natural person.

IPO DABUS ruling (India, 2020), Pointing to international consensus, the decision is based on the disregard of AI inventorship.

Nevertheless, courts do sympathize with the growing policy vacuum, and they all underline the necessity for legislative revisions. For instance, the UK IPO consultation (2022) looked at how the idea of inventorship might change with the future but still kept the condition of the inventors being human at that time.[44]

VIII. CHAPTER 6: INTERNATIONAL TREATIES AND HARMONIZATION

A. TRIPS, WIPO treaties

1. TRIPS

The legal ground. According to Article 27.1 of the TRIPS[45] Agreement[46] members of the WTO[47] must "make patents available for any inventions, whether products or processes, in all fields of technology" as long as the inventions are new, involve an inventive step and are industrially applicable. TRIPS does not outline "invention" nor demand that a

[43] *Thaler v Vidal, 43 F.4th 1207 (Fed. Cir. 2022)*
[44] *UK Intellectual Property Office, Consultation on Artificial Intelligence and Intellectual Property (UK IPO, 2022)*
[45] *Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement, 1995)*
[46] *Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement), 15 April 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 UNTS 299*
[47] *World Trade Organization (WTO), Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) (1995)*

certain type of inventorship (human vs. non- human) be defined. So technically, TRIPS sets a minimum standard: members are prohibited from depriving an entire technological field from patenting rights in a categorical manner (except for the few cases mentioned in Article 27(2), (3)).

Implication for AI: TRIPS does not point to the necessity of an AI to be identified as an inventor; it only dictates that inventions that meet the set criteria are to be patentable without any discrimination by the field. The decision of what or who the "inventor" is, as well as the question of ownership/rights, is, for the most part, a national issue that has to be in compliance with the non, discrimination and minimum standards of TRIPS.

2. WIPO

WIPO mounted a multi-stakeholder "Conversation on IP and AI[48]" which was a thoroughly documented event presenting the problem of AI inventions, different cases of inventorship, challenges of disclosure requirements, and the possibility of new legal policies in solving this. The work done by WIPO is advisory in nature, it collects and analyses the different international views on what policy has to be chosen (e.g., human, only inventorship; human, assisted inventorship; sui, generis regimes) and thus, gives a neutral venue for the discussions, but it does not have the authority to change TRIPS obligations at the treaty level.

The WIPO outputs are generally relied on by the national offices and legislatures as one of the main sources of the international practice and the neutral "menu" of reform options (disclosure rules, co, inventorship thresholds, and sui-generis rights) Implementation.

TRIPS introduces minimum substantive standards (novelty, inventive step, industrial applicability) and forbids discrimination against any field but it does not stipulate who the "inventor" should be or how ownership is arranged, those are questions for domestic

[48] *World Intellectual Property Organization (WIPO), "WIPO Conversation on Intellectual Property (IP) and Artificial Intelligence (AI): Third Session – Summary of Discussions" (November 2020) WIPO/IP/AI/3/INF/3, Geneva: WIPO*

laws. WIPO enables comparative research and policy, making but does not provide any binding rules.

IX. CHAPTER 7: CONCLUSION

A. Merits and demerits of AI as an Inventor/Creator

1. Pros

- More accurate reflection of technology and incentives- the fact that AI is one of the inventors will be an indication that automated systems are able to produce valuable, non- trivial technical output without human intervention and thus will be an incentive for investing in such systems. (Promotes R&D investments in labs that create generative AI for scientific/industrial use.)
- Output of new ideas will be accompanied with more clarity- having a formal way of identifying the source of a new technological idea that is inventive in nature, as well as a method of copyrighting the product, will lessen the disagreements of who the legal owner of the rights is (the developer, the operator, or the one who owns the dataset) by implementing a legal moment when the AI is considered the author, thus leading to the statutory default rules on assignment.
- Improved disclosure and provenance- if AI inventorship is recognized only with a regime that conditions protection only on disclosure of training data/model provenance, then there would be a lot of transparency and less possibility of hidden data reuse either from copyright or being secret.

2. Cons / Risks

- Legal personhood and property problems- the machines do not have legal personality, so if AI is named as an inventor it becomes problematic to assign, license, enforce rights or litigate unless legislatures come up with special assignment rules. Courts have raised this issue in DABUS cases.

- Perverse incentives and concentration of rights- the decision to grant the complete patent rights for AI, generated inventions might be the cause that the biggest companies with the most training datasets and the largest compute resources will get the most significant monopolies, and as a result, the downstream innovations and the competition of the industry will be strangled.
- Moral and accountability issues- the reform of the inventorship to include AI would mean the abolition of the idea of human responsibility as the credits and the ethical obligations of the inventions are among the human traits and machines don't have such features.
- Problems of administration and doctrinal strain- the doctrines of patentability (novelty, inventive step, sufficiency) were all human, centered in their conception, so allowing AI to be the sole creator without making the necessary changes in the doctrine would lead to low, quality patents (disclosures that are difficult to understand and an uncertain inventive step).

B. Adequacy of current IP frameworks

1. Treaty floor but national discretion

The TRIPS Agreement defines the minimum standards of patentability, novelty, inventive step, and industrial applicability, as the requirements for which patents for inventions are to be granted. [49]However, it does not characterize an inventor nor indicate who may hold the rights, thus leaving the question of inventorship and ownership to be resolved by national law. This openness to member countries enables them to develop their own solutions but also results in possible border, crossing differences in the way they identify the inventors thereby complicating matters of AI, generated inventions.

2. Office and court practice today (conservative & human, centric)

[49] *Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), 1994, Art. 27(1)*

Patent offices and courts worldwide have, in most cases, come to the same conclusion, that inventorship should be understood in a human, centric way. AI systems are considered only as means which help human inventors[50]. Both the European Patent Office (EPO) and the U.S. Federal Circuit, in the DABUS cases[51], have endorsed this view by deciding against the idea of AI as an inventor. Likewise, the USPTO through its guidelines has made it clear that significant human contribution is required for one to be considered an inventor, and that applicants are obliged to indicate the degree of AI involvement[52].

3. Gaps and strains

Current laws recognize the inventions made with the help of AI, however, they do not have the capacity to handle those outputs that are generated autonomously without any human intervention. There is still no uniform legal standard for:

- establishing the concept of inventorship in such situations,
- deciding who the owners of the resulting rights are, and
- guaranteeing enough disclosure in "black box" systems. The differences in the DABUS patent applications decisions made by various jurisdictions reflect those gaps and strains that are still there.

C. Recommendations for Adapting IP Law to AI Innovations

The ongoing AI and patent law integration changes how human society should think about reforming our laws.

1. Administrative Measures

- **Compulsory AI Disclosure**

[50] *WIPO, Revised Issues Paper on Intellectual Property Policy and Artificial Intelligence, 2020*
[51] *Thaler v. Comptroller General of Patents, Designs and Trade Marks [2021] EWCA Civ 1374; Thaler v. Vidal, 43 F.4th 1207 (Fed. Cir. 2022)*
[52] *United States Patent and Trademark Office, Inventorship Guidance for AI-Assisted Inventions, 2023*

Patent applicants must outline where and when AI was used in the creative process with a patent application[53]. The disclosure would enable the searching of prior art to be more accurate and the standard of the examination to be kept at the same level.

- **Patent office Guidelines**

Patent offices at the national level, such as IPO, U.S.P.T.O., and E.P.O., should provide detailed instructions to examiners interpreting AI inventions. The guidelines will offer more insight to examiner determination when they deal with issues like the technical contribution, the sufficiency of the disclosure, and the inventor standard[54]. Thus, decision, making by the examiners will be at a higher level and procedures will be of the same kind when they meet with different examiners.

- **Audit and Provenance Requirements**

AI-related patent applicants need to record how the AI is implemented, the datasets used for training, and the generative process[55]. Such records will act as provenance, thus being the source to establish originality and to secure the area from being accused of data plagiarism or biased in algorithmic.

- **Competition and Data Safeguards**

One of the conditions in the right to regulate is to protect against monopolization of AI-generated inventions. Access to training data and computing resources should be fair so that innovation is not limited only to the ecosystem but will be accessible for the whole community.[56]

D. Legislative Measures

1. Inventorship Clarification

[53] *United States Patent and Trademark Office, Inventorship Guidance for AI-Assisted Inventions, 2023*
[54] *European Patent Office, Guidelines for Examination in the EPO, 2023 (Part G-II, 3.3.1)*
[55] *World Intellectual Property Organization, Draft Issues Paper on Intellectual Property Policy and Artificial Intelligence (WIPO, Geneva, 2020)*
[56] *Organisation for Economic Co-operation and Development, AI, Competition and Data Access: Policy Principles for Fair Innovation (OECD, Paris, 2022)*

Patent laws need a rewrite to outline clearly what defines the inventorship. Although the inventorship should be one of a natural human being, there is a possibility that the developer or the owner of the system can be considered the person having the right to the invention so as to get rid of the ambiguity of ownership in the case of an autonomous AI.

2. Sui Generis Protection Regime

The legislatures may come up with a sui generis right offering limited duration or narrower exclusivity to the made, to, order inventions of Artificial Intelligence. It will preserve the balance of the equation between the incentive and the innovator's right as well as the right of public access, and thus, avoid the problem of the concentration of AI, generated IP excessively.

3. Global Harmonization via WIPO/TRIPS

With the help of the TRIPS Council, the World Intellectual Property Organization (WIPO) is in the position to set international model standards for patent law regarding inventorship in AI. [57]The standardization brings about the reduction of IP conflicts that arise as a result of cross, border activities and also the consistency in the global patent practice.

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