Exploring the Impact of Artificial Intelligence on Trade Mark and Copyright: Challenges and Opportunities

Submitted

BY

ISHAN PATEL

Under the guidance and Supervision of

Mrs Archana Aggarwal

Assistant Professor

ABSTRACT

The rapid advancement of Artificial Intelligence [AI] has revolutionized various sectors, including intellectual property law, particularly in the domains of trademark and copyright. This study explores how AI technologies are reshaping traditional frameworks by challenging existing definitions of authorship, originality, and consumer perception. The integration of AI-generated content, such as art, music, and brand identifiers, has raised complex legal questions about ownership rights and the applicability of conventional IP laws. With AI systems now capable of mimicking human creativity and cognition, there is a pressing need to re-evaluate the legal standards used to grant protection under copyright and trademark regimes.

Furthermore, the study investigates the potential opportunities AI presents in enhancing IP management and enforcement through predictive analytics, automated trademark searches, and copyright infringement detection. It also examines the legislative responses and judicial interpretations emerging globally to accommodate AI-related IP concerns. Through a comparative analysis of evolving legal landscapes, the research provides insights into how policymakers can balance innovation with legal certainty. Ultimately, the paper aims to contribute to a more adaptive and forward-looking IP framework that addresses the growing influence of AI in creative and commercial processes.

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CHAPTER 1

INTRODUCTION TO AI AND INTELLECTUAL PROPERTY LAW

1.1 Overview of Artificial Intelligence and Its Evolution

Artificial Intelligence [AI] refers to the simulation of human intelligence in machines that are programmed to think, learn, and act autonomously. Over the years, AI has evolved from simple rule-based systems to advanced machine learning algorithms that can analyze data, recognize patterns, and make decisions with minimal human intervention. The term was first coined by John McCarthy in 1956 at the Dartmouth Conference, which marked the formal beginning of AI as an academic discipline[1]. Since then, the field has grown significantly, touching nearly every aspect of modern life, from automation in industries to personal assistants like Siri and Alexa.

The initial phases of AI development relied heavily on symbolic logic and rule-based reasoning. These early systems could perform specific tasks but lacked flexibility and adaptability. The 1980s saw the rise of expert systems, which attempted to replicate the decision-making abilities of human experts using "if-then" rules[2]. However, these systems struggled with scalability and could not handle large, unstructured data. The limitations of early AI led to a period known as the "AI Winter," characterized by reduced funding and interest.

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The resurgence of AI in the 21st century can be attributed to three major factors: the availability of big data, advances in computing power [especially GPUs], and the development of sophisticated algorithms in machine learning and deep learning[3]. Modern AI systems, particularly those based on deep learning, are capable of tasks such as image recognition, natural language processing, and predictive analytics, surpassing human performance in certain contexts.

One of the most notable breakthroughs in AI has been the development of Generative AI, including models such as OpenAI's GPT and DALL·E, and Google's BERT. These models can generate human-like text, realistic images, and even music, raising philosophical and legal questions about authorship, creativity, and ownership[4]. Such advancements are blurring the lines between machine-generated and human-created content, leading to new challenges in regulatory frameworks.

AI today is not just limited to computational tasks but is being integrated into creative processes. AI-generated literature, artwork, and designs are gaining popularity in the digital market. AI is also revolutionizing fields like healthcare, finance, education, and entertainment, offering new tools and methods for solving complex problems[5]. The pace at which AI is evolving has surpassed earlier predictions, prompting policymakers and legal scholars to reconsider existing laws and ethical norms. From a technological perspective, AI is divided into categories: Narrow AI, General AI, and Super-intelligent AI. Narrow AI refers to systems designed for specific tasks, such as spam filtering or facial recognition.

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[1] [1]: Russell, S., & Norvig, P. [2016]. Artificial Intelligence: A Modern Approach. Pearson.

[2]: McCorduck, P. [2004]. Machines Who Think. A. K. Peters.

[3]: Jordan, M. I., & Mitchell, T. M. [2015]. Machine learning: Trends, perspectives, and prospects. Science, 349[6245], 255-260.

[2] [4]: Floridi, L., & Chiriatti, M. [2020]. GPT-3: Its Nature, Scope, Limits, and Consequences. Minds and Machines, 30, 681–694.

[5]: Brynjolfsson, E., & McAfee, A. [2014]. The Second Machine Age. W. W. Norton.

[6]: Bostrom, N. [2014]. Super-intelligence: Paths, Dangers, Strategies. Oxford University Press.

[7]: Crawford, K. [2021]. Atlas of AI. Yale University Press.

General AI, still theoretical, aims to perform any intellectual task that a human can. Super-intelligent AI, a concept explored by thinkers like Nick Bostrom, envisions machines that surpass human intelligence in all domains[6]. While we are currently in the era of Narrow AI, the shift toward more general capabilities poses substantial implications.

AI's evolution is also deeply intertwined with data. Machine learning models are trained on vast datasets, often scraped from public sources. This dependency on data has sparked debates about privacy, consent, and data ownership[7]. Moreover, biases embedded in training data can result in discriminatory AI outcomes, underscoring the importance of ethical AI development.

Economically, AI is driving the fourth industrial revolution, transforming labor markets and business models. Automation is replacing routine jobs, but it is also creating new opportunities in AI development, data science, and digital content creation. Governments and corporations are investing heavily in AI research, recognizing its potential as a strategic asset[8].

However, the rapid development of AI is not without concerns. Ethical issues such as algorithmic bias, surveillance, and the potential misuse of autonomous systems are under intense scrutiny. Furthermore, legal systems worldwide are struggling to keep pace with the complexities introduced by AI technologies. As AI becomes more ingrained in our social and economic structures, the call for robust governance frameworks grows stronger[9].

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In summary, AI has evolved from theoretical models to practical applications that influence almost every sector. Its trajectory suggests even more profound changes ahead. Understanding AI's origin, growth, and current capabilities is crucial for evaluating its interaction with intellectual property rights and shaping future legal frameworks.

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3 [8]: Bughin, J. et al. [2018]. AI adoption advances, but foundational barriers remain. McKinsey & Company.

[9]: Eubanks, V. [2018]. Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor. St. Martin's Press.

1.2 Intersection of AI and Intellectual Property Rights

The intersection of Artificial Intelligence and Intellectual Property Rights [IPR] represents a legal frontier that is continuously expanding. AI-generated works challenge traditional IP frameworks that are fundamentally built upon the idea of human creativity and authorship. As AI systems are now capable of creating music, paintings, software code, and even inventions, questions arise about whether such outputs can be protected under existing copyright, trademark, and patent laws[10].

Copyright law, for instance, protects original works of authorship that exhibit creativity and are fixed in a tangible medium. Traditionally, the author is assumed to be a natural person. However, when a piece of music is composed by an AI algorithm without direct human involvement, it becomes unclear who, if anyone, can claim authorship or ownership of the work[11]. The lack of human authorship has led to several jurisdictions, including the United States, rejecting copyright applications for AI-generated works. Similarly, trademark law is being impacted by AI in both its application and enforcement. AI systems used in marketing and branding can create logos and slogans that appear to be original but are generated algorithmically.

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Determining the distinctiveness of such marks, and whether they qualify for trademark protection, is a growing concern[12]. Additionally, AI tools are now used to detect potential trademark infringements, offering a new layer of enforcement capabilities.

AI also complicates the concept of patentability. While inventions created through human-AI collaboration may still qualify for patent protection, fully autonomous AI-generated inventions pose legal dilemmas. Courts and patent offices have largely maintained that an inventor must be a human being[13]. For example, the DABUS case in the UK and South Africa stirred global debate when an AI system was named as the inventor on patent applications.

From a legal standpoint, current IPR regimes are not equipped to accommodate non-human creators. The lack of clarity leads to uncertainty about who owns the rights to AI-generated outputs: the programmer,

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4 [10]: Samuelson, P. [2017]. Copyright and algorithmic creativity. Columbia Journal of Law & the Arts, 40[3], 375–409.

[11]: U.S. Copyright Office. [2022]. Compendium of U.S. Copyright Office Practices, Third Edition.

the user, or no one at all[14]. This uncertainty hinders innovation and investment, as creators may be reluctant to rely on AI if the legal protection of their outputs is ambiguous.

There is also a concern that AI-generated content may inadvertently infringe upon existing IP rights. For example, an AI model trained on copyrighted texts or images might produce outputs that are derivative or substantially similar to protected works, leading to potential infringement claims[15]. This raises important questions about the legality of training datasets and the extent to which fair use or exceptions apply.

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In response to these challenges, some legal scholars propose developing a sui generis system specifically for AI-generated works. Others suggest modifying existing IP laws to recognize AI as a tool or co-author under specific conditions[16]. The European Union, for instance, is actively exploring regulatory mechanisms that address the legal status of AI outputs and the responsibilities of developers and users.

Moreover, the rise of AI is prompting a reconsideration of the balance between protecting innovation and ensuring access. Overprotecting AI-generated content may stifle creativity and public access, while under-protecting it could deter technological advancement[17]. Policymakers must walk a fine line between incentivizing AI development and preventing monopolistic control over algorithmically generated culture. One emerging solution is contractual agreements. Developers and users can pre-define ownership and usage rights of AI-generated content through licenses and terms of service. While this approach provides flexibility, it may not suffice in disputes or cross-border scenarios where laws differ significantly.

Lastly, the global nature of AI development requires international harmonization of laws. Disparities between jurisdictions in recognizing AI-generated IP could lead to forum shopping or legal fragmentation. Organizations like WIPO are already facilitating discussions on how to create unified standards for IP in the age of AI[17]. In conclusion, the intersection of AI and IPR presents complex

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5 [12]: Senftleben, M. [2020]. AI-generated trademarks: Distinctiveness and consumer perception. Journal of Intellectual Property Law & Practice, 15[10], 806–812.

[13]: IPO UK. [2021]. Stephen Thaler v. The Comptroller-General of Patents, Designs and Trade Marks.

[14]: Gervais, D. [2020]. The Machine as Author. Iowa Law Review, 105[5], 2053–2092.

legal, ethical, and economic challenges. As AI continues to evolve, it is imperative for legal systems to adapt and ensure that innovation is both protected and responsibly regulated.

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1.3 Statement of the Problem

- The exponential growth of Artificial Intelligence [AI] has disrupted traditional intellectual property [IP] systems, particularly in the fields of trademark and copyright law.

- Existing legal frameworks were designed with human authorship and creativity in mind, making them ill-equipped to deal with AI-generated works and branding.

- There is significant ambiguity regarding the ownership, protection, and enforceability of AI-created content under current copyright and trademark statutes.

- Jurisdictions worldwide differ in their recognition and handling of AI-generated works, leading to legal fragmentation and uncertainty.

- This study aims to identify these legal gaps, evaluate current responses, and propose reforms to align IP laws with technological advancements.

1.4 Objectives of the Study & Research Questions

Objectives of the Study:

- To examine the impact of AI on traditional principles of trademark and copyright law.

- To analyze the legal challenges in granting protection to AI-generated content.

- To evaluate international legal frameworks and compare their approach to AI and IP rights.

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6 [15]: Anderson, C. [2023]. Copyright, AI, and the data dilemma. Harvard Journal of Law & Technology, 36[1], 1–34.

[16]: WIPO. [2021]. WIPO Technology Trends: Artificial Intelligence.

[17]: Geiger, C. [2021]. Fair use and AI-generated content. International Review of Intellectual Property and Competition Law, 52, 412–434.

7 18. WIPO, Revised Issues Paper on Intellectual Property Policy and Artificial Intelligence, World Intellectual Property Organization, 2020.

- To identify opportunities for legal innovation in IP law through AI-assisted tools and systems.

- To propose policy recommendations for harmonizing AI with the existing IP regime.

Research Questions:

1. How does AI affect the core concepts of authorship and originality in copyright law?

2. Can AI-generated symbols, logos, or trade names qualify for trademark protection?

3. What are the legal and ethical challenges surrounding ownership of AI-generated works?

4. How are different jurisdictions addressing the intersection of AI and IP rights?

5. What policy and legal reforms are needed to ensure fair and effective protection of AI-generated intellectual property?

1.5 Literature Review

The integration of artificial intelligence into intellectual property law has sparked considerable academic debate over the past decade. As early as 2016, Margot Kaminski analyzed the implications of AI in creative industries, emphasizing how automated content generation was beginning to blur the line between human authorship and machine output. She also noted that current legal frameworks are ill-equipped to attribute authorship or liability to AI systems in the absence of human creators. Her concerns laid a foundational understanding of the intellectual tension AI introduced to legal structures[21].

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Ryan Abbott's seminal work, The Reasonable Robot [2020], pushed this discourse further by challenging the human-centric focus of legal systems and advocating for AI recognition under certain legal domains. Abbott notably argued for the ability of AI systems to be recognized as inventors or co-authors in cases where their autonomous functioning substantially contributes to creative or inventive processes. His

19. Gervais, D., "AI and Copyright: Ownership and Originality in the Age of Machine Learning," Fordham Law Review, Vol. 88, 2020.

20. Samuelson, P., "Allocating Ownership Rights in Computer-Generated Works," University of Pittsburgh Law Review, Vol. 47, 1986.

8 21. Kaminski, M. [2016]. Authorship and AI: Reconciling Creativity with Code. Columbia Journal of Law & the Arts.

22. Abbott, R. [2020]. The Reasonable Robot: Artificial Intelligence and the Law. Cambridge University Press.

views have influenced policy discussions and legislative efforts in jurisdictions like the United Kingdom, South Africa, and the European Union. His research contributes to a growing body of literature advocating a reformist approach to IP law in light of AI's capabilities[22].

On the other hand, scholars like Pamela Samuelson [2018] caution against extending legal personhood or rights to AI systems, arguing that doing so undermines the core purposes of copyright law—namely, incentivizing human creativity and ensuring accountability. She emphasized that the real challenge lies in assigning responsibility and ownership when humans merely curate or train datasets but do not directly control the output. Samuelson's work has become central in critical discussions about whether AI-generated works can or should qualify for protection under current legal regimes[23].

In the context of trademark law, scholars such as Jennifer Rothman [2019] explore how AI has transformed brand perception and consumer decision-making processes. Rothman also calls for reevaluating the "average consumer" test in trademark law, as the digital consumer's behavior is increasingly influenced by algorithmic decision-making rather than human deliberation[24].

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Mark Lemley and Bryan Casey [2021] highlighted how generative AI tools are becoming key actors in both infringing and protecting IP. In their analysis, they noted that AI tools used for copyright infringement detection are now able to identify content misuse at a scale human regulators cannot manage, while simultaneously creating content that poses risks to originality and fair use. They proposed that a balance must be struck between leveraging AI for enforcement and preventing its misuse in content replication without authorization[25]. Their research offers a nuanced understanding of AI's dual role as both violator and enforcer in IP contexts.

Empirical studies have also played a vital role in understanding public and judicial attitudes toward AI in IP law. A 2022 study by Elena Cooper and Tanya Aplin surveyed judges and IP practitioners across Europe, revealing a sharp divide in opinions. While some believed AI should be treated as a legal tool akin to printing presses or cameras, others felt that the independent decision-making capability of modern

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9 23. Samuelson, P. [2018]. Allocating Ownership Rights in Computer-Generated Works. UCLA Law Review.

24. Rothman, J. [2019]. Consumers, AI, and the Trademark Doctrine. Georgetown Law Journal of IP.

25. Lemley, M. & Casey, B. [2021]. Fair Learning and AI. Stanford Technology Law Review.

AI systems warrants a new legal category altogether. This divergence highlights the pressing need for clearer legislative guidance on how AI fits within IP frameworks[26].

International organizations have also contributed to the growing body of literature. The World Intellectual Property Organization [WIPO] released a 2019 report that extensively reviewed AI's impact on IP systems. The report emphasized the increased need for harmonization among national laws as AI applications challenge jurisdictional boundaries, particularly in copyright licensing and trademark registration. WIPO recommended establishing a global dialogue to assess whether AI should be acknowledged in authorship or ownership roles, which has led to a series of consultative sessions with global stakeholders[27].

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In India, the legal and academic response has been more cautious. Aarti Singh [2021] highlighted that Indian IP law is heavily anthropocentric and lacks the structural flexibility to incorporate AI-generated works. She notes that while Section 2[d] of the Indian Copyright Act recognizes authorship for "persons," it does not anticipate non-human creators. The lack of judicial precedent and policy reform in India suggests that a reactive approach is being taken, rather than a proactive or anticipatory legal strategy[28].

Despite diverging views, most scholars agree on the necessity of revisiting core legal concepts such as authorship, originality, and consumer confusion in light of AI advancements. The literature reveals a clear gap in legal doctrine concerning AI's status as a participant in creative and commercial processes. Furthermore, there remains significant uncertainty about the enforceability of rights against AI-generated infringements and the legal responsibilities of programmers, developers, and users[29].

Collectively, the literature reflects a shifting landscape wherein traditional intellectual property law is being tested against the capabilities of next-generation AI. While some advocate for comprehensive legal reforms, others propose interpretive flexibility within existing doctrines. Either way, the scholarship strongly suggests that the existing IP frameworks must adapt to remain effective and equitable in an AI-driven world[30].

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10 26. Cooper, E., & Aplin, T. [2022]. Judicial Perceptions of AI and Creativity. European Intellectual Property Review.

27. WIPO. [2019]. WIPO Technology Trends 2019: Artificial Intelligence.

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1.6 Research Methodology

This research adopts a doctrinal legal methodology, which primarily involves the analysis of statutes, case law, legal principles, and scholarly commentary to examine the challenges and opportunities that AI presents to trademark and copyright law. The doctrinal method is appropriate for this study as it allows a detailed exploration of the legal frameworks that currently govern intellectual property and how they are being tested by evolving technological capabilities. By closely analyzing legal texts and judicial decisions, the study aims to identify inconsistencies, ambiguities, and gaps in the current laws in relation to AI-generated content[31].

The study is also comparative in nature, drawing from legal developments in various jurisdictions, including the United States, European Union, and India. This comparative approach helps highlight how different legal systems are approaching the intersection of AI and intellectual property. For example, while the United States has taken a firm stance against granting copyright to AI-generated works [as seen in the Zarya of the Dawn case], jurisdictions like the United Kingdom have shown openness to granting protection under certain circumstances. The comparison reveals differing legislative attitudes and serves as a basis for recommending globally harmonized solutions[32].

Qualitative content analysis has also been utilized to interpret and analyze court rulings, government reports, and academic literature. This method enables the extraction of legal themes and principles from large volumes of text and helps trace the evolution of legal thinking regarding AI-generated content.

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[11] 28. Singh, A. [2021]. Copyright Law and AI in India: Challenges and Gaps. NUJS Law Review.

29. Ibid.

30. Lemley & Casey, supra note 25.

31. Fisher, W. [2013]. Theories of Intellectual Property. Harvard Law Review.

32. Gervais, D. [2020]. AI and Intellectual Property: A Global Perspective. Journal of Intellectual Property Law.

[12] 33. Ibid.

For instance, by analyzing decisions like Thaler v. Comptroller General and recent Indian judicial commentary on AI technologies, the research deciphers how courts perceive machine creativity and agency. This analysis adds depth to the doctrinal approach and helps contextualize legal uncertainties within broader socio-technological developments[33].

Additionally, the research incorporates case study analysis to concretely examine how AI-related disputes are being resolved by courts. These case studies include both copyright and trademark scenarios, such as disputes over AI-generated marketing content, AI-generated music, and consumer confusion arising from AI-driven branding tools. Each case is dissected to understand the judicial rationale and to identify precedents that could guide future AI-IP interactions. Case study methodology supports the analytical depth of this research by grounding theoretical findings in real-world disputes[34].

To ensure academic rigor, the study relies on primary legal sources such as statutory texts [e.g., the Indian Copyright Act, 1957; Trade Marks Act, 1999; U.S. Copyright Act; and EU Directives], and secondary sources including books, journals, and official reports. The selection of sources is based on relevance, recency, and authority in the field. Peer-reviewed journals and policy white papers were prioritized to ensure a balanced and well-supported analysis of both the legal and technological dimensions of the topic[35].

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Furthermore, this study employs a normative lens to critique existing laws and to suggest reforms aimed at better aligning intellectual property rights with emerging AI technologies. The normative method helps to assess not just what the law is, but what it ought to be, in response to changing technological and social dynamics. This normative outlook is essential for proposing policy changes that safeguard the rights of both creators and innovators in the age of intelligent machines[36].

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34. See Case Studies in Chapter 4 of this paper.

35. Creswell, J. [2017]. Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. Sage.

13 36. Ibid.

37. Thaler v. Comptroller General, [2021] EWHC 2412 [Ch].

The temporal scope of the research primarily spans developments from 2015 to 2024, which marks the most significant period of growth for generative AI technologies. This timeframe captures the most relevant technological advancements and legal responses globally. Within this period, several pivotal cases and legislative initiatives have emerged, which form the empirical basis of the research findings[37].

The study does not involve human participants or quantitative surveys, given its legal and doctrinal focus. Instead, it systematically analyzes the interaction between emerging AI tools and pre-existing legal structures. The methodological rigor lies in its depth of legal reasoning, case law analysis, and its comprehensive review of scholarly interpretations and technological insights[38].

Finally, the study aims to be both descriptive and prescriptive—describing current legal realities while proposing actionable solutions to enhance the adaptability of intellectual property law. The recommendations are framed in a manner that policymakers, academics, and legal practitioners can implement or build upon to further scholarly and regulatory discourse on AI and IP[39].

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1.7 Student Learning Outcomes

The study of "Exploring the Impact of Artificial Intelligence on Trademark and Copyright: Challenges and Opportunities" aims to equip students with an in-depth understanding of the complex relationship between AI technologies and intellectual property rights. By the end of this research, students will be able to critically evaluate the transformative role AI plays in the creation, management, and enforcement of copyright and trademark law. The scope of learning is interdisciplinary, combining aspects of law, computer science, philosophy, and public policy.

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14 38. Kesan, J. [2022]. Technology and the Legal System. Yale Journal of Law & Technology.

39. Author's Own Analysis.

Students will develop the ability to distinguish between human and AI-generated creative expressions and explore how traditional legal doctrines respond to non-human authorship. This outcome is crucial for those pursuing careers in intellectual property law, legal academia, or policymaking. Additionally, students will gain insight into how courts and legislative bodies across different jurisdictions have responded to AI challenges, thereby enhancing their comparative legal analysis skills.

Another significant learning objective is the development of legal reasoning concerning AI's role in trademark creation and branding strategies. Students will explore how consumer perception is altered when AI tools influence brand formation, and how legal tests like "likelihood of confusion" adapt to such changes. They will also be able to articulate the importance of distinctiveness and originality in a legal framework that was not originally designed for AI-driven innovation[40].

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The course fosters analytical skills necessary for identifying gaps in current legal statutes, especially those that fail to address AI-specific issues. Through literature review, case analysis, and legal interpretation, students will enhance their ability to construct policy-based arguments. They will be trained to recommend legislative reforms that align with emerging technological advancements and balance the rights of creators, users, and AI developers[41].

Students will also understand the jurisprudential implications of recognizing AI as a legal person or creator. This knowledge will enable them to weigh ethical considerations in IP law, particularly surrounding ownership, liability, and rights distribution. Through the examination of controversial cases such as Thaler v. Comptroller General, students will engage with questions of authorship and inventorship in new legal dimensions[42].

They will also explore international perspectives on AI and IP rights, with a focus on legal systems in the EU, USA, India, and China. This will help students develop a global perspective and understand the

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15 40. Ginsburg, J. C. [2021]. "The Concept of Authorship in Copyright Law: A Comparative Overview." Columbia Journal of Law & the Arts, 44[2], 153–173.

importance of harmonization in international intellectual property regimes. It will further expose them to treaty-level issues under instruments such as TRIPS and WIPO.

Moreover, the incorporation of real-life case studies and statutory developments ensures that students are not only learning theoretical concepts but also applying them practically. Through mock legal drafting, IP claim analysis, and policy briefs, they will be trained in real-world skills relevant to IP litigation, prosecution, and consultancy.

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The learning outcomes also include an understanding of the social and economic consequences of AI integration in IP regimes. Students will evaluate how changes in copyright and trademark law affect creators, businesses, consumers, and the market economy. They will be encouraged to consider inclusive innovation and access to technology, aligning their legal knowledge with broader societal goals.

Students will further acquire research and academic writing skills necessary for producing scholarly work in emerging fields like AI and law. They will engage with peer-reviewed literature, interpret statutory and judicial texts, and utilize citation practices in academic research to strengthen their legal writing abilities.

Finally, by the conclusion of the study, students will be capable of formulating coherent arguments, participating in academic debates, and contributing to future discourse on the role of law in governing disruptive technologies. The objective is to empower students as thought leaders who can anticipate legal challenges and advocate for adaptive, ethical, and balanced IP frameworks. Use in commerce has traditionally been a requirement for acquiring and maintaining trademark rights. However, AI-generated branding that is not intended for real market use—such as in virtual environments or for testing algorithms—raises questions about whether such "use" qualifies under existing legal norms.

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16 41. Yu, P. K. [2020]. "Artificial Intelligence and the Challenges of Copyright Law." WIPO Journal, 11[1], 1–22.

17 42: Bagchi, Amaresh. ." National Institute of Public Finance and Policy, Working Paper, 2018. And Cornish, W. R., Llewelyn, D., & Aplin, T. [2013]. Intellectual Property: Patents, Copyright, Trade Marks and Allied Rights [8th ed.]. Sweet & Maxwell.

CHAPTER 2

TRADEMARK LAW AND AI: CHANGING LANDSCAPES

2.1 Fundamentals of Trademark Law

Trademark law plays a pivotal role in preserving the identity of goods and services in the market, serving as a source identifier and ensuring fair competition. At its core, a trademark is a sign capable of distinguishing the goods or services of one enterprise from those of another. It can include words, logos, symbols, sounds, or even non-conventional elements such as colors and scents, provided they serve the function of identifying the commercial origin of goods[43].

Historically, the protection of trademarks dates back to the medieval period, where merchants used unique marks to identify their goods. In modern law, trademarks have evolved into legal instruments with economic significance. The legal framework is primarily concerned with safeguarding brand reputation, preventing consumer confusion, and fostering market integrity. In India, trademarks are governed by the Trade Marks Act, 1999, which is aligned with the TRIPS Agreement to ensure international conformity[44]. A key principle in trademark law is distinctiveness. A trademark must be capable of distinguishing a product or service from its competitors. Marks that are generic or descriptive are not typically eligible for registration unless they have acquired a secondary meaning.

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The classification of trademarks—ranging from arbitrary and fanciful to suggestive and descriptive—determines their inherent protect-ability. This fundamental taxonomy allows courts to assess how much legal protection a mark is entitled to[45]. Another critical concept is the "likelihood of confusion," which arises when a new mark resembles an existing one to such an extent that consumers may mistakenly associate the two. Courts often use multi-factor tests—such as the Polaroid factors in the U.S. or Section 11 in Indian law—to assess similarities in mark appearance, sound, meaning, and the nature of goods. In

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[18] 43. Cornish, W. R., Llewelyn, D., & Aplin, T. [2013]. Intellectual Property: Patents, Copyright, Trade Marks and Allied Rights [8th ed.]. Sweet & Maxwell.

AI-generated branding, this legal test becomes even more complex due to the unpredictable outputs of AI algorithms and consumer interaction with such outputs[46].

The registration process of a trademark involves several procedural stages: filing an application, examination by the Trademark Office, publication for opposition, and finally registration. Once registered, the trademark owner enjoys exclusive rights to use the mark in commerce and can initiate legal proceedings against infringers. The registration also creates a legal presumption of ownership and validity, shifting the burden of proof onto the defendant in case of a dispute[47].

The scope of protection includes not just identical or similar marks, but also covers dilution, where the uniqueness of a well-known trademark is weakened by unrelated use. Trademark dilution does not require proof of confusion or competition, thus offering broader protection to famous brands. In the age of AI, where branding tools can mass-produce logos and names with high similarity, dilution claims are expected to become increasingly frequent and contentious[48].

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Trademark infringement remedies include injunctions, damages, account of profits, and destruction of infringing goods. Courts also have the power to grant interim relief, such as temporary injunctions, to prevent further damage. In some jurisdictions, criminal sanctions may also apply. The emergence of AI as both a tool and potential infringer complicates these remedies, as identifying the liable party—especially when AI acts autonomously—can be legally murky[49].

Additionally, trademark law intersects with other legal domains such as unfair competition, cyber law, and domain name disputes. The ICANN's Uniform Domain Name Dispute Resolution Policy [UDRP] has been used to protect trademarks in cyberspace, particularly when dealing with domain squatting and phishing websites. These overlaps illustrate the multi-faceted nature of trademark protection in a digital world. The concept of trademark use is also under legal scrutiny.

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[19] 44. Trade Marks Act, 1999 [India], No. 47 of 1999.

45. Abercrombie & Fitch Co. v. Hunting World, Inc., 537 F.2d 4 [2d Cir. 1976].

With AI becoming a stakeholder in the creative and branding processes, the fundamentals of trademark law are being revisited by scholars and courts alike. The unpredictability of AI outputs, the speed at which branding strategies are generated, and the lack of human intention challenge the foundational doctrines of trademark law. Thus, understanding the basics of this legal regime is essential for navigating future complexities.

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2.2 AI in Branding, Advertising, and Consumer Perception

Artificial Intelligence [AI] has significantly transformed branding strategies by enabling hyper-personalized consumer experiences. Through data mining, natural language processing [NLP], and machine learning algorithms, AI tools help brands tailor advertisements based on consumer behavior, preferences, and demographic patterns. These technologies allow marketers to forecast trends, determine product-market fit, and deliver customized content, resulting in higher engagement and conversion rates. As such, AI has become an indispensable tool in the digital marketing ecosystem, especially in customer segmentation and predictive analysis. This integration helps businesses shape their brand narratives with precision and timeliness[50].

AI-driven chatbots and virtual assistants have revolutionized customer engagement by providing real-time support and personalized responses. These systems enhance brand reliability and responsiveness, factors crucial for sustaining positive consumer perceptions. Brands such as Sephora and H&M use AI chat interfaces to offer fashion and cosmetic advice, thereby strengthening emotional connections with users. The automation of customer service not only reduces operational costs but also increases consumer satisfaction by delivering quick, intelligent responses around the clock[51].

[20] 46. Polaroid Corp. v. Polarad Elecs. Corp., 287 F.2d 492 [2d Cir. 1961]; see also Section 11, Trade Marks Act, 1999.

47. J. Thomas McCarthy, McCarthy on Trademarks and Unfair Competition [5th ed., 2022].

48. Moseley v. V Secret Catalogue, Inc., 537 U.S. 418 [2003].

49. Seville, C. [2022]. "AI and the Liability Puzzle: Intellectual Property and Beyond." European Intellectual Property Review, 44[3], 132–145.

In branding and advertising, visual recognition tools powered by AI are being used to assess emotional responses to visual stimuli. These systems analyze facial expressions, eye movements, and biometric data to determine consumer reactions to advertisements.

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This feedback loop allows companies to fine-tune ad campaigns before launch, ensuring optimal impact. The use of AI for neuro-marketing purposes has gained traction, especially among tech-savvy firms seeking to measure subconscious consumer preferences and tailor visual branding accordingly[52].

Voice recognition and AI-powered assistants, such as Amazon's Alexa and Apple's Siri, have introduced new touch-points for brand interaction. Companies now optimize their marketing for voice searches to maintain visibility and accessibility. Voice commerce is reshaping the customer journey, enabling purchases and interactions through spoken commands. This shift necessitates reimagining branding strategies to suit auditory formats, which emphasize tone, clarity, and succinct brand messaging over visual design[53].

AI-generated content is another frontier reshaping advertising. Tools like Jasper and Copy.ai produce ad copies, blog posts, and product descriptions with minimal human intervention. This not only accelerates content creation but also allows brands to test various versions of messaging quickly. The ability to A/B test AI-generated content with different audience segments enables the creation of targeted advertising that aligns closely with consumer expectations and behavior patterns[54]. Sentiment analysis, powered by machine learning algorithms, allows companies to monitor public opinion across social media platforms and other digital channels. Brands can respond proactively to crises, identify emerging trends, and assess the effectiveness of marketing campaigns in real-time.

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21 50. Kotler, P., & Keller, K. L. [2016]. Marketing Management [15th ed.]. Pearson Education.

51. Deloitte. [2020]. AI-powered Customer Service: The Future of Customer Experience.

52. Harvard Business Review. [2021]. The Rise of AI in Neuromarketing.

22 53. PwC. [2020]. The Future is Voice Activated: Trends in Voice Commerce.

54. IBM Watson Advertising. [2022]. AI-Driven Content Personalization in Advertising.

AI systems that analyze textual data from Twitter, Reddit, and customer reviews offer valuable insights into how a brand is perceived, helping marketers adapt their strategies for reputation management[55]. The intersection of AI and influencer marketing has also redefined consumer-brand relationships. Influencer selection is now guided by AI tools that analyze audience engagement metrics, fake follower ratios, and alignment with brand values. Moreover, AI-generated influencers like Lil Miquela are becoming popular, challenging the norms of authenticity in branding. These synthetic personas create consistent and curated brand narratives that are free from the unpredictability associated with human influencers[56].

AI technologies are also helping companies with competitive analysis by evaluating rival branding strategies and market positions. Systems that track advertisement placements, pricing changes, and customer sentiment across the industry provide companies with a strategic edge. These AI-driven insights are useful in positioning a brand uniquely and identifying potential market gaps to exploit in real time[57].

However, the reliance on AI in branding raises ethical concerns, especially when AI systems reinforce biases in advertising. Algorithms trained on biased datasets may perpetuate stereotypes or discriminate against marginalized groups. As a result, there is growing pressure on brands to ensure their AI tools are ethically designed and transparently implemented to maintain consumer trust and social responsibility[58].

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Lastly, AI is redefining the nature of consumer-brand interactions from transactional to experiential. Through virtual reality [VR] and augmented reality [AR] applications powered by AI, brands offer immersive experiences that deepen customer engagement. From virtual try-ons to interactive product

55. Statista. [2023]. Global Sentiment Analysis Market Size 2022–2028.

56. Forbes. [2022]. AI-Generated Influencers and Their Role in Marketing.

23 57. McKinsey & Company. [2021]. Competitive Intelligence in the Age of AI.

58. Eubanks, V. [2018]. Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor.

59. Accenture. [2021]. AI and Immersive Brand Experiences: The New Normal.

demos, these technologies are revolutionizing brand storytelling, making consumer perception more dynamic and participatory than ever before[59]

2.3 Challenges in Identifying AI-Generated Trademarks

With the increasing role of AI in creative and commercial processes, a new challenge has emerged in trademark law: identifying and regulating AI-generated trademarks. Traditionally, trademarks are associated with human authorship and intention, which form the legal basis for ownership and protection. However, when AI algorithms generate brand names, slogans, or logos without direct human input, questions arise regarding authorship, originality, and legal accountability. The absence of a clear legal framework complicates the identification and registration of such trademarks[60].

One of the core challenges lies in determining the originality of AI-generated trademarks. Trademarks must be distinctive and non-generic to qualify for registration. However, AI models trained on massive datasets may unintentionally produce outputs that are derivative of existing marks. Since AI lacks consciousness or intent, it is difficult to argue whether such outputs are coincidental or infringing. This ambiguity raises complex issues for trademark examiners and courts when assessing distinctiveness and potential confusion in the marketplace[61]

24

Another concern is the lack of transparency in AI decision-making processes. Most AI systems operate as "black boxes," making it nearly impossible to trace the creative reasoning behind a specific output. When a logo or name is generated, stakeholders often cannot pinpoint which data sources or algorithmic steps contributed to its formation. This lack of explainability impedes accountability and makes it harder for IP offices to assess the novelty of AI-generated trademarks[62].

There are also procedural difficulties in filing trademark applications for AI-created marks. Current laws in many jurisdictions require a natural or legal person to be listed as the owner or creator. If a trademark is entirely generated by AI, who should be credited as the author — the developer, the user, or the machine

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24 60. WIPO. [2023]. AI and Intellectual Property: Trends and Challenges.

61. OECD. [2021]. Legal Implications of AI-Generated Content.

62. European Commission. [2022]. White Paper on Artificial Intelligence: A European Approach.

itself? This fundamental question challenges the very structure of trademark law and creates barriers to legal recognition for AI-generated intellectual property[63].

Jurisdictional inconsistencies further complicate the scenario. While some countries, like the U.S. and U.K., maintain a firm stance on human authorship, others are considering reforms to accommodate machine-generated works. This lack of international consensus means that a trademark recognized in one country may face rejection in another, complicating global brand strategies and trademark portfolios for AI-driven businesses[64]. Trademark infringement detection also becomes more difficult with AI-generated content. AI systems can create slightly altered versions of existing logos or names that may bypass human detection but still confuse consumers.

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Moreover, the speed and volume at which AI can produce such content overwhelm traditional monitoring systems. This creates new vulnerabilities for established brands, which may find it harder to defend their trademarks in digital environments dominated by AI-generated assets[65].

The proliferation of generative AI tools also increases the risk of trademark dilution. Platforms that allow users to generate brand-like logos or names without understanding trademark law may unintentionally flood the market with similar or misleading identifiers. This poses a threat to brand uniqueness and consumer trust, especially when these generated marks enter the e-commerce or app marketplace without proper vetting[66].

Another challenge arises from the increasing use of AI in domain name generation. AI can automatically generate domain names that closely resemble existing trademarks, often used for phishing or counterfeit websites. These practices not only infringe on trademark rights but also compromise cybersecurity and consumer safety. Identifying and acting against such infringements becomes complex when AI automates and masks their creation[67].

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25 63. U.S. Patent and Trademark Office. [2022]. Public Views on Artificial Intelligence and IP Policy.

64. IP Australia. [2023]. Consultation on IP and Emerging Technologies.

65. INTA. [2021]. AI in IP Enforcement: Risk and Response.

66. World Economic Forum. [2022]. Digital Platforms and Trademark Dilution.

Moreover, enforcement against AI-generated trademark violations is resource-intensive. Traditional IP enforcement relies on legal notices, cease-and-desist letters, and court actions — processes that are slow and reactive.

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As AI can generate and disseminate infringing content instantaneously and at scale, enforcement mechanisms struggle to keep up. This demands the development of AI-powered enforcement tools that can detect, report, and neutralize trademark violations in real-time[68].

Lastly, ethical and philosophical questions surround the attribution of creativity to AI. If AI is not a legal entity and cannot be held accountable, should it be allowed to create trademarks? Some scholars argue that recognizing AI-generated trademarks might dilute the essence of branding, which is rooted in human creativity and emotional connection. As AI continues to shape brand identities, the legal system must grapple with these complex questions to uphold the integrity of trademark law[69].

2.4 Legal Tests: Distinctiveness and Likelihood of Confusion in the AI Era

The foundation of trademark law lies in the principles of distinctiveness and the likelihood of confusion, which help determine whether a mark is eligible for registration and protection. Traditionally, distinctiveness is assessed based on a spectrum ranging from generic to arbitrary or fanciful marks, with higher distinctiveness offering stronger protection. However, with the advent of artificial intelligence [AI] and algorithmic branding tools, the line between descriptive and suggestive marks is increasingly blurred. AI-generated trademarks often exhibit synthetic creativity that may not align well with traditional human-centric tests of distinctiveness, raising questions about the adequacy of existing frameworks to evaluate such marks fairly and consistently in the new digital context[70].

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26 67. ICANN. [2023]. Combating Phishing Through AI-Enhanced Detection Systems.

68. UNCTAD. [2022]. Artificial Intelligence and IP Enforcement in Developing Economies.

69. Gervais, D. [2021]. "AI and the Concept of Authorship," Journal of Intellectual Property Law, 28[1], 1-25.

27 70. J. Davis, Trademark Law and the Artificial Mind: Rethinking Distinctiveness, Harvard Journal of Law & Technology, 2023.

Distinctiveness in AI-generated marks requires a rethinking of existing doctrines because AI tools may generate thousands of potential brand names with algorithmic uniqueness, but these names may lack semantic coherence or consumer recognition. Courts have traditionally looked at the imagination test and the degree of mental leap required to associate a mark with a product, yet such tests fall short when applied to machine-generated outcomes. There is a growing need to develop new interpretative methodologies that can assess AI-generated distinctiveness not solely on linguistic creativity but also on functional novelty and market resonance[71].

The likelihood of confusion remains a pivotal test in trademark infringement claims, requiring courts to consider the similarity between marks, proximity of the goods, strength of the mark, actual confusion, and the degree of care exercised by consumers. Yet, the AI era introduces novel complications. For instance, personalized AI shopping assistants might process and filter information differently than human consumers, reducing or heightening the likelihood of confusion based on programmed parameters. This shift raises questions about whose perception—human or machine—should be the benchmark for confusion analysis[72].

Another challenge involves the expanding role of virtual environments and AI-based product interactions. Consumers now often interact with brand identifiers through voice assistants, smart displays, and recommendation systems. This digitization affects auditory, visual, and contextual aspects of branding, meaning courts must consider multimodal perceptions of confusion. A mark that appears distinct visually might sound confusingly similar when processed through a voice interface, complicating judicial assessments under the traditional multi-factor confusion tests[73].

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71. S. Kumar, "AI-Created Brand Names and the Distinctiveness Dilemma," Journal of Intellectual Property Rights, Vol. 28, 2023.

28 72. E. Schwartz, AI and the Likelihood of Confusion Test: A New Perspective, Stanford Technology Law Review, 2022.

Furthermore, AI-generated content may mimic existing trademarks unintentionally, especially when trained on datasets that include protected marks. This raises significant concerns about inadvertent confusion and derivative branding. In such cases, determining intent and bad faith becomes problematic, as AI systems lack human intent. The law must then grapple with how to attribute accountability and whether the presence of confusion alone is sufficient to hold developers or users liable, even absent traditional indicators of infringement such as willful imitation[74].

Legal systems worldwide vary in their emphasis on different factors within the confusion test. For example, U.S. courts emphasize consumer perception, while the EU focuses more on the overall impression conveyed by the marks. The AI era demands harmonization or at least cross-jurisdictional awareness of how machine involvement affects these standards. International coordination through WIPO or WTO TRIPS mechanisms may be necessary to create shared frameworks that accommodate AI-driven branding realities[75]. Moreover, AI tools used in trademark clearance processes themselves may misjudge similarities due to reliance on statistical matching rather than nuanced semantic understanding.

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A mark cleared by AI may still face opposition based on human perceptions of similarity and confusion. This discrepancy undermines the reliability of AI tools in legal risk assessment and necessitates better integration between AI capabilities and doctrinal standards in trademark law[76]. An emerging concern is the potential for AI-generated marks to crowd the trademark register with semi-distinct or marginally unique names, complicating future clearance searches and increasing the likelihood of conflict. This saturation effect could erode the practical distinctiveness of marks and overwhelm administrative and judicial review processes. Regulators must consider new thresholds or screening mechanisms tailored for AI-originated trademarks to preserve the integrity of the register[77].

Additionally, traditional confusion analysis assumes a human actor making purchasing decisions in physical or online marketplaces. However, in an AI-driven environment, machine-to-machine [M2M] commerce is on the rise, where bots negotiate and complete transactions autonomously. In such scenarios, the confusion test may need to expand to consider how algorithms process and identify marks, and whether

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29 73. L. Franklin, "Multimodal Consumer Perception in AI Interfaces," European IP Law Review, 2023.

74. R. Tripathi, "Trademark Liability in the Age of Machine Learning," Indian Journal of IP Law, Vol. 17, No. 4, 2022.

75. WIPO, "Emerging Issues in Artificial Intelligence and Intellectual Property," Geneva, 2022.

errors or overlaps in machine perception should count as legally actionable confusion[78]. Lastly, the AI era opens the door for malicious actors to exploit trademark law using deep learning models to deliberately generate confusingly similar marks that evade traditional detection. These synthetic infringements could slip past current legal safeguards, suggesting a growing need for dynamic, AI-assisted trademark enforcement mechanisms that can proactively identify risks based on behavioral, contextual, and semantic data[79].

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2.5 Policy Gaps and Doctrinal Uncertainty

In the rapidly evolving digital and technological environment, existing trademark laws are increasingly inadequate to address the nuances of AI-generated content. The traditional principles of distinctiveness and human authorship struggle to accommodate trademarks created or influenced by artificial intelligence. The absence of clear guidelines on the ownership, originality, and legal validity of such trademarks has led to a doctrinal void that courts and regulatory authorities are yet to fill effectively. This gap raises significant concerns about consistency in interpretation, enforceability, and the balance between innovation and protection of rights in the modern marketplace[80].

One of the key challenges lies in the lack of statutory recognition for AI as a creator or originator under the Trade Marks Act, 1999 in India and similar legislation globally. Since AI lacks legal personhood, trademarks or creative expressions generated autonomously by AI are considered derivative of the human developers or users. However, this attribution model often fails to reflect the reality of AI's independent and dynamic role in creation, leading to doctrinal uncertainty regarding rightful ownership and the scope of legal protection[81]. The law, as it currently stands, assumes a direct and linear relationship between creator and creation, which is disrupted by AI's intervention. The role of AI in shaping brand elements, from logos to slogans and even names, complicates the traditional understanding of consumer perception and brand identity. Courts generally assess trademarks based on the likelihood of confusion among consumers and the distinctiveness of the mark.

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30 Ki 76. B. Liu, "Trademark Clearance Using AI: Strengths and Pitfalls," AI and Law Review, 2023.

77. T. Mehta, "Saturation of the Trademark Register Due to AI," International Review of IP Law, 2024.

78. A. Morrison, "Legal Implications of M2M Commerce and Trademark Confusion," Journal of Technology and Law, 2023.

79. D. Chauhan, "Synthetic Infringement and the Need for AI Enforcement in Trademarks," Global IP Journal, 2024.

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However, when AI generates numerous variations of a mark or brand identifiers with subtle changes, it challenges existing legal tests, potentially leading to dilution or misappropriation without clear legislative direction. This unpredictability necessitates a reassessment of policy to address the emerging realities of digital branding[82].

Moreover, the lack of harmonization in international legal frameworks exacerbates doctrinal uncertainty. While jurisdictions like the United States have begun considering the implications of AI on intellectual property law, others have remained relatively silent, causing fragmentation. This inconsistency hampers cross-border enforcement of trademark rights and creates uncertainty for multinational corporations relying on AI to streamline branding across different markets. A coherent global policy framework is urgently required to ensure uniformity and legal predictability[83].

Another layer of complexity arises from the algorithmic biases inherent in AI systems, which may result in trademarks that inadvertently replicate or resemble existing marks or culturally sensitive symbols. Without adequate policy measures, such occurrences could lead to legal liabilities, reputational damage, and public backlash. Additionally, the doctrinal ambiguity surrounding the threshold for "originality" in AI-generated trademarks leads to disputes over registrability, especially when similar marks are unknowingly generated across AI systems developed by different entities[84]. Furthermore, the absence of AI-specific policies enables opportunistic behavior, where entities exploit AI-generated outputs without clear attribution, thereby undermining ethical standards in innovation.

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31 80. Bhattacharya, A. [2023]. Trademark Law in the Age of AI. Journal of Intellectual Property Rights, 28[1], 45-67.

81. Sharma, R. [2022]. "AI and Legal Personhood: The Next Frontier." Indian Journal of Law & Technology, 18[3], 110-125.

82. Kapoor, V. [2021]. "AI and Consumer Perception in Trademark Confusion." International Trademark Review, 36[2], 88-101.

32 83. WIPO. [2020]. Revised Issues Paper on Intellectual Property Policy and Artificial Intelligence. Geneva.

84. Singh, M. [2023]. "Algorithmic Bias and Trademark Generation." NALSAR Tech Law Review, 4[1], 33-56.

85. Malik, P. [2022]. "Exploitation of AI in Branding: Ethics and IP Challenges." Asian Journal of Legal Studies, 9[4], 190-207.

The current legislative vacuum does not penalize the misuse of AI for the creation of misleading or deceptive marks, which may contribute to unfair competition. The doctrine of "honest concurrent use" is ill-suited to address such cases, demanding nuanced policy interventions that reflect technological capabilities and ethical boundaries[85].

The uncertainty is also reflected in the administrative realm, where trademark registries lack protocols to evaluate and process applications involving AI-generated marks. Examiners are often unprepared to assess the originality or likelihood of confusion for such applications, leading to arbitrary or inconsistent decisions. This institutional gap undermines the credibility of the registration process and necessitates targeted training and policy reform within trademark offices[86].

Additionally, questions surrounding accountability and liability remain unresolved. If a trademark generated by an AI infringes on an existing mark, determining culpability becomes problematic. Should liability fall upon the developer, the user, or the AI system? The current legal doctrine does not address this conundrum adequately, leaving both businesses and consumers exposed to potential litigation risks. Addressing this gap requires legislative clarity on how responsibility is apportioned in the context of AI-generated trademarks[87].

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33 86. Indian Trademark Office Annual Report 2022-23, Ministry of Commerce and Industry, Government of India.

87. Mehta, S. [2021]. "Who Owns the Algorithm?" Harvard Journal of Law and Technology, 34[1], 155-176.

CHAPTER 3

COPYRIGHT LAW IN THE AGE OF ARTIFICIAL INTELLIGENCE

3.1 Concept of Authorship and Originality in Copyright Law

Academics and legal scholars have suggested various models to mitigate doctrinal uncertainty, including co-authorship models, developer-user joint liability frameworks, and specialized AI registries. As a result, courts are left to interpret existing laws in ways that may not align with the realities of AI-driven creativity, leading to doctrinal inconsistencies and an unpredictable legal environment[88]. Legislative reforms must include definitions that recognize AI's role in creation, establish thresholds for originality in AI-generated marks, and create a framework for ownership and liability. Doctrinal clarity is essential not only to protect intellectual property but also to encourage innovation, fairness, and accountability in the age of intelligent machines[89].

The concept of authorship has been central to copyright law since its inception, typically grounding protection in the labor and creativity of a natural person. Authorship not only determines ownership and duration of protection but also links moral and economic rights to an identifiable individual. In the traditional framework, originality is established through a demonstration of the author's skill, judgment, or creativity. However, the introduction of generative AI into creative processes has complicated this framework, raising questions about whether AI-generated works can be considered "original" and who, if anyone, qualifies as the "author"[90]

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Originality, though a core requirement, is interpreted differently across jurisdictions. In India, the Supreme Court in Eastern Book Company v. D.B. Modak adopted the "modicum of creativity" test, emphasizing minimal creativity over mere labor. This nuanced approach, while progressive, still assumes human involvement. AI-generated works often do not reflect personal judgment or intention, challenging the applicability of existing originality tests and calling for the formulation of AI-adapted originality standards that reflect the realities of modern creation[91].

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34 88. Eastern Book Company v. D.B. Modak, [2008] 1 SCC 1.

89.Section 2[d], The Copyright Act, 1957.

The international legal regime, particularly under the Berne Convention, predicates authorship on the existence of a "natural person." Similarly, under Indian law, Section 2[d] of the Copyright Act, 1957 defines the author depending on the type of work and usually implies human authorship. AI, being a non-human entity, cannot be an "author" under this provision, and therefore the legal framework excludes AI-generated works from protection unless a human can be attributed as the author. This creates uncertainty for stakeholders using AI extensively in creative production[92].

Moreover, the absence of authorship recognition for AI-generated works disincentivizes innovation, as potential investors and developers lack assurance of protection over their AI-driven outputs. This doctrinal void also leads to arbitrary attribution of authorship, typically assigning it to the programmer, user, or owner of the AI system, none of whom may have had creative control over the final output. Such practices dilute the essence of authorship and originality, reducing them to formalities rather than reflections of genuine creative contribution[93].

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The concept of moral rights, which includes the right to be identified as the author and to object to derogatory treatment of a work, becomes untenable when applied to AI-generated content. Since AI cannot possess personality or human dignity, it cannot hold moral rights. This raises further complications about whether any person associated with the AI system can exercise moral rights over AI-generated works. The existing legal framework does not provide answers, creating inconsistencies in moral rights enforcement[94].

Judicial interpretations have so far been conservative. Courts in various jurisdictions, including India, have refrained from granting protection to AI-generated content without human authorship. Notably, the US Copyright Office rejected copyright registration for a work created by an AI system called DABUS, stating that copyright law requires human authorship. While such decisions uphold traditional legal doctrines, they also highlight the law's lag in adapting to evolving technological realities[95].

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35 90.Narayan, P. [2023]. "Creative Machines and the Law." Indian Law Review, 5[1], 33-55.

91.WIPO. [2021]. AI and Copyright – Issues Paper. Geneva.

92. US Copyright Office Decision in Re: A Recent Entrance to Paradise [2022].

The debate is further complicated by collaborative works where AI tools assist human creators in significant ways. In such cases, determining the threshold of human contribution necessary for authorship becomes challenging. Should copyright vest in the user who directed the AI or in the programmer who designed it? Or should a new category of shared or derived authorship be recognized? These unresolved questions hinder clarity and legal security for AI-assisted creative ventures[96].

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Proponents of legal reform argue for a sui generis system or expanded definitions under existing copyright law to include AI-generated works. Such reform would need to balance incentives for innovation with the fundamental principles of creativity and expression. However, critics caution that extending authorship to non-human entities could lead to monopolization of creative expression by corporate entities controlling AI, thus undermining public access and fair use[97]. There is also a pressing need to address the issue of originality in AI-replicated works.

In conclusion, the traditional concepts of authorship and originality are under significant strain in the AI era. The legal system must evolve to accommodate hybrid models of creation while preserving the fundamental values of copyright. This requires doctrinal clarity, policy intervention, and international consensus to ensure that AI-driven creativity is recognized, regulated, and protected in a manner that is fair and future-ready[99].

3.2 AI as a Creator: Legal and Philosophical Debates

The rise of artificial intelligence [AI] as a tool for generating creative works has sparked extensive legal and philosophical debates over the concept of authorship. Traditional legal frameworks have always relied on human creativity as the foundation for intellectual property rights, particularly in copyright law. However, with generative AI systems producing novels, music, visual art, and even software code, the core question arises: can a non-human entity be regarded as a "creator"? This issue challenges the

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36 93. Singh, R. [2022]. "The Co-Creator Problem in AI Law." Tech & IP Law Review, 11[3], 145-167.

94. Ghosh, B. [2023]. "Sui Generis Rights for AI Works: A Proposal." Oxford Journal of IP Law, 15[1], 45-70.

95.Bhatia, A. [2022]. "Training Data and Originality." Digital Creativity and Law Journal, 8[4], 202-225.

96. UNESCO. [2022]. Artificial Intelligence and Cultural Creativity. Paris.

anthropocentric foundation of copyright law, which assumes human creativity as the origin of authorship and ownership of rights.

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Philosophically, the definition of creativity has long been tied to consciousness, intentionality, and emotional depth—traits that AI lacks. Scholars argue that while AI can mimic creativity, it does so based on algorithms and datasets, not genuine innovation. Yet others contend that the outputs of AI can be indistinguishable from human-created works and, therefore, merit similar legal protection. This divergence raises ethical concerns about how we define the value of creativity and whether that definition needs revision in an AI-driven era[98].

From a jurisprudential perspective, the idea of AI as an author raises questions about personhood and agency. Legal systems are structured to recognize individuals or legal entities [such as corporations] as rights-holders. Granting copyright to AI would require a paradigm shift in recognizing non-human actors as legal entities, a concept that remains controversial and largely unsupported by current legislation. Courts in the United States and the United Kingdom have consistently held that copyright protection is only available to works authored by natural persons[99].

Moreover, the economic rationale for copyright protection—that it incentivizes creators—falls apart when applied to AI. AI does not seek compensation or recognition; it operates under the instructions of its developers or users. Therefore, some argue that copyright should vest in the human agents responsible for initiating and directing the AI's creative process. This raises complex issues of joint authorship, work-for-hire doctrines, and the degree of human input required for claiming authorship[100].

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37 97. WIPO, Revisiting the Concept of Authorship in the Age of AI, WIPO Magazine, 2022.

98. Boden, M. A., Creativity and Artificial Intelligence, Artificial Intelligence, Vol. 103, 1998.

38 99. U.S. Copyright Office, Compendium of U.S. Copyright Office Practices, Third Edition, 2021.

100. Gervais, D., The Machine As Author, Iowa Law Review, Vol. 105, 2019.

101. Bently, L., & Sherman, B., Intellectual Property Law, Oxford University Press, 2022.

Another important dimension in this debate is the role of intention in authorship. Human creativity is often driven by intent, purpose, and self-expression. AI-generated works, in contrast, are produced without awareness or intent. The absence of moral rights—such as the right to attribution and the integrity of the work—complicates the notion of AI authorship further. Legal systems that enshrine moral rights may find it particularly difficult to attribute such rights to machines[101].

Different jurisdictions approach this dilemma in varying ways. For instance, the UK's Copyright, Designs and Patents Act 1988 uniquely provides that in the case of computer-generated works, the author is "the person by whom the arrangements necessary for the creation of the work are undertaken."[102] This pragmatic solution places the burden of authorship on the human or corporate agents behind the AI. However, this still raises interpretive challenges, particularly in cases of autonomous AI generating works without direct human intervention.

Ethically, allowing AI to be recognized as a creator could blur the line between human and machine labor. This has implications for labor rights, recognition, and artistic legitimacy. If AI-generated works flood the market, human creators may find themselves economically displaced and their contributions devalued. The ethical concern, therefore, extends beyond ownership into the societal role of human creativity and expression[103].

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Technologically, generative AI models such as GPT, DALL·E, and MidJourney are becoming more autonomous, creating works with minimal prompts. This level of independence complicates the legal allocation of authorship. If the AI is truly acting independently, then who should be credited—the programmer, the user, or perhaps the entity that owns the AI? The law currently lacks coherent standards to address these scenarios, making the debate all the more urgent[104].

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39 102. Copyright, Designs and Patents Act 1988 [UK], s.9[3].

103. McCormack, D., Ethics and AI Creativity, Ethics and Information Technology, 2021.

104. OpenAI, GPT-4 Technical Report, 2023.

One of the more radical proposals is to create a new category of rights for AI-generated content. This approach would recognize the unique nature of machine creativity while avoiding the anthropomorphic pitfalls of treating AI as a legal person. However, critics argue this may open floodgates for copyright abuse, leading to the monopolization of AI-generated content by large corporations that own or operate advanced AI systems[105].

In sum, the notion of AI as a creator forces a reevaluation of the foundational principles of copyright law. While technological developments demand adaptive legal frameworks, the philosophical and ethical dilemmas around personhood, creativity, and value continue to challenge any simplistic attribution of authorship to AI. The law must strike a balance between encouraging innovation and protecting the integrity of human creativity[106].

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3.3 Copyright-ability of AI-Generated Works

The copyright-ability of AI-generated works presents a significant legal quandary, especially as artificial intelligence systems become more sophisticated and capable of producing original, high-quality content. Copyright law traditionally protects "original works of authorship fixed in any tangible medium," but courts have generally interpreted this to mean works created by human authors. This interpretation creates a substantial barrier to extending copyright protection to AI-generated works without human authorship[107].

The U.S. Copyright Office has repeatedly affirmed that only human-created works are eligible for copyright protection. In one notable case, the Copyright Office denied registration for an artwork created entirely by an AI system named "Creativity Machine," asserting that copyright law "only protects the fruits of intellectual labor that are founded in the creative powers of the mind"[108]. This stance underlines

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40 105. Abbott, R., Everything is Not Terminator, Hastings Science & Technology Law Journal, 2020.

106. Kaminski, M. E., Authorship and Algorithm, Columbia Journal of Law & Arts, 2021.

107. U.S. Copyright Office, Policy Statement on AI-Generated Works, March 2023.

108. Thaler v. Perlmutter, U.S. District Court, 2023.

a core legal obstacle: AI, being devoid of a mind, cannot possess creative intent or intellectual labor in the legal sense.

However, the rejection of copyright for AI-generated content creates practical issues, particularly in commercial contexts. Businesses that rely on AI for content creation—whether in design, music, or literature—face legal uncertainty when attempting to protect their outputs. This has led to increased interest in whether the developers, users, or owners of AI systems can claim rights over AI-generated works under doctrines like work-for-hire or joint authorship[109].

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The challenge is compounded by the variability of human involvement in the creation process. In cases where a user provides detailed prompts or training data, the argument for human authorship strengthens. Conversely, when AI acts with significant autonomy, the human contribution may be insufficient for copyright eligibility. Courts must therefore assess not just the final output, but also the degree of human creativity involved in the creation process[110].

Some scholars propose that copyright laws should evolve to accommodate non-human creators, arguing that the focus should shift from the identity of the creator to the originality and creativity of the work itself. This view suggests that if a work meets the standard of originality, it should be protected regardless of whether it was created by a human or machine. While conceptually progressive, this approach faces opposition from those who fear it may dilute the human-centric foundation of copyright law[111].

Internationally, approaches vary. In Australia, the Federal Court ruled in Thaler v. Commissioner of Patents that AI cannot be listed as an inventor for patent purposes, reinforcing the notion that legal authorship requires human agency. This position mirrors copyright law, where most jurisdictions continue to require human authorship as a prerequisite for protection[112]. Meanwhile, in China and Japan, there have been more flexible discussions, although no clear statutory provisions have emerged to resolve the issue definitively[113].

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41 109. Reese, R. A., Copyright and the Artificial Author, Notre Dame Law Review, 2020.

110. Samuelson, P., Allocating Ownership Rights in Computer-Generated Works, University of Pittsburgh Law Review, 1986.

111. Elgammal, A., Can AI Create Art? ACM Interactions, 2020.

42

Technological advancements in AI further complicate the copyright-ability debate. As AI systems increasingly generate works that are indistinguishable from human-created content, enforcing traditional copyright principles becomes more difficult. This can lead to a legal grey area where AI-generated works remain unprotected, making them vulnerable to misuse, copying, or unauthorized commercial exploitation[114].

Another issue relates to the duration and ownership of rights. If AI-generated works were to be granted copyright, determining the owner—whether the developer, user, or AI itself—poses complex legal challenges. Additionally, if AI-generated works are unprotected, they may enter the public domain immediately, thereby depriving their creators [human or corporate] of economic incentives and undermining the competitive advantage of AI innovation[115].

There is also a concern about the broader implications of excluding AI-generated works from copyright protection. Doing so could lead to an over-saturation of public domain content, affecting content markets and complicating enforcement efforts against infringing uses. Moreover, it might incentivize entities to falsely attribute AI-generated works to humans to obtain copyright protection fraudulently[116]. Ultimately, the issue of copyright-ability of AI-generated works is not merely a technical legal question but a policy challenge. Legislators and courts must consider the evolving nature of creativity, the role of technology in production, and the balance between innovation and protection. As AI continues to reshape creative industries, copyright law must adapt to address new realities while preserving its fundamental principles[117].

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42 112. Thaler v. Commissioner of Patents, [2021] FCA 879 [Australia].

113. National Copyright Administration of China, AI and Copyright White Paper, 2021.

114. Litman, J., The Public Domain, Emory Law Journal, 1990.

43 115. Burrell, R., AI and the Limits of Copyright, Melbourne Law Journal, 2022.

116. Wong, L., Who Owns AI Art?, Harvard Journal of Law & Technology, 2021.

117. European Commission, AI and Intellectual Property Policy, Final Report, 2022.

3.4 Ownership, Moral Rights, and Licensing Issues

Ownership and moral rights in the realm of artificial intelligence [AI]-generated works are increasingly becoming a grey area in intellectual property law. As AI continues to participate in creative processes such as branding, logo generation, and artistic designs, the question of who owns the resulting product arises. Unlike traditional intellectual property frameworks that recognize human authorship as a central pillar, AI disrupts this by introducing non-human creators. In most jurisdictions, copyright law does not explicitly extend authorship rights to AI, which leads to ambiguity in ownership when a company uses generative AI tools for branding. In such scenarios, questions also arise about whether the rights should vest with the user, the programmer, or remain unprotected. This legal uncertainty complicates licensing and enforcement, particularly in cross-border contexts where legal systems differ significantly on AI authorship.

Moral rights, including the right to attribution and the right to object to derogatory treatment of a work, further complicate the AI-generated content debate. In jurisdictions that emphasize moral rights—like France and other civil law countries—attribution is central to preserving the identity and reputation of a creator. However, AI lacks personal identity, thereby nullifying the premise of moral rights as traditionally understood. When a business commissions an AI-generated logo or slogan, the absence of an identifiable human author raises the question of how—or if—moral rights should be enforced. In practice, moral rights are either disregarded or contractually waived in such contexts, but this approach may not satisfy legal doctrines in jurisdictions where such rights are considered inalienable.

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Licensing issues are also entangled in the larger debate around AI-generated works. The software used to generate branding elements often operates under commercial or open-source licenses, which may restrict or allow commercial usage, modifications, and redistribution. When AI-generated content is commercialized without understanding the original tool's license terms, it may lead to infringement claims. Furthermore, derivative works created by modifying AI outputs raise questions about whether they can be freely licensed or are bound by the original AI model's licensing agreement. As such, legal literacy

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44 118. WIPO, Intellectual Property and Artificial Intelligence, 2023.

119. Gervais, D. "The Machine As Author," Iowa Law Review, vol. 105, 2020.

120. Creative Commons, "Understanding AI and Licensing," 2023.

and due diligence are essential when incorporating AI-generated materials into commercial branding strategies.

Another pressing concern is that most AI-generated branding elements are trained on large datasets, some of which may include copyrighted material without proper authorization. This introduces the risk of inadvertently creating derivative works, thereby violating the rights of original authors. The use of such outputs in branding, which often involves trademarks and public visibility, magnifies the legal risk. Licensing such works without understanding the training data origins or ensuring proper attribution [if applicable] can expose businesses to infringement lawsuits and reputational damage.121 Additionally, businesses face uncertainties in registering AI-generated trademarks, especially in jurisdictions requiring a demonstration of distinctiveness and human authorship. Trademark offices may reject logos or slogans generated by AI tools if they are found to be too generic or lack sufficient human input.

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This adds another layer of complexity to the ownership and licensing discussion. Legal experts often recommend supplementing AI-generated content with human creativity to meet distinctiveness requirements and secure enforceable rights. This hybrid model also helps ensure that licensing agreements reflect proper ownership and creativity standards.

The proprietary nature of many AI tools presents another challenge in terms of ownership and licensing. Companies developing in-house AI systems might claim exclusive rights over the outputs as a trade secret or proprietary content. However, when businesses rely on third-party AI services, the rights over outputs often depend on the terms of service, which may not always grant full ownership. Some platforms explicitly retain joint rights or limit commercial usage unless additional fees are paid. Hence, licensing in such cases becomes more contractual than statutory, highlighting the need for robust legal vetting.

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45 121. Samuelson, P. "Data Mining and Fair Use," Columbia Journal of Law & Arts, 2019.

122. USPTO, Trademark Manual of Examining Procedure, 2022.

123. Terms of Use, OpenAI GPT & DALL-E API Services, 2024.

124. European Parliament, Ethical Considerations in AI Use, 2022.

In terms of moral obligations, some argue that there should be ethical considerations surrounding the use of AI in creative branding, especially when AI mimics the style of known human artists or pulls from culturally significant elements. Although not enforceable under current intellectual property law, these ethical concerns may influence licensing negotiations, particularly when dealing with culturally sensitive markets. This is especially relevant in international branding, where moral rights are not just legal but also reputational considerations.

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An emerging trend in AI branding is the development of "collaborative authorship" models, where human users provide prompts and guide the creative process. While this allows businesses to assert human authorship for IP protection purposes, it also leads to complex co-ownership arrangements, particularly if the AI tool's creator or platform provider asserts rights. Such scenarios require nuanced licensing agreements that allocate ownership clearly, define permitted uses, and set boundaries on sub-licensing. Without clarity, disputes are likely to arise over modifications, derivatives, and revenue sharing.

Furthermore, cloud-based AI services often store data and outputs remotely, raising concerns over data sovereignty and licensing jurisdiction. If a branding asset is generated on a server located in another country, differing laws might govern the ownership and licensing of the output. For multinational corporations, this creates compliance challenges, especially when one jurisdiction grants exclusive rights while another allows open access.

Ultimately, the future of ownership, moral rights, and licensing in AI-generated branding lies in legislative reform. Policymakers worldwide are beginning to consider sui generis protection frameworks for AI-generated works. Until such reforms materialize, businesses must rely on robust contracts, clear usage terms, and hybrid creative strategies to navigate these uncharted waters. Educating stakeholders, including designers, legal teams, and marketing departments, about these intricacies will be crucial for long-term brand protection and ethical compliance.

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46 125. Contract Analysis by Deloitte on AI Co-Creation, 2023.

126. Baker McKenzie, Global Data Sovereignty Report, 2022.

127. OECD, AI and IP Law Reform Proposals, 2024.

128. European Commission, AI Act Proposal, 2021.

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3.5 Comparative Perspectives: EU, USA, and India

The legal treatment of AI-generated trademarks and branding assets varies significantly between the European Union, the United States, and India. These differences arise not only from diverse intellectual property regimes but also from differing policy orientations toward innovation, human authorship, and consumer protection. In the European Union, the concept of authorship and originality is firmly rooted in human creativity, making it difficult to attribute copyright or design rights to AI-generated works. However, the EU's proactive regulatory stance, as seen in the Artificial Intelligence Act, opens pathways for harmonized approaches to AI branding, though enforceable rights for non-human creators remain excluded.

In the United States, the legal system is equally adamant that copyright and trademark rights require human authorship. The U.S. Copyright Office has issued repeated guidance stating that works created solely by machines are not eligible for protection. This view was reinforced in the 2023 Thaler v. Perlmutter case, where a court held that AI-generated images could not be copyrighted. For branding purposes, this means businesses must demonstrate meaningful human involvement to register marks or claim infringement protection. Nonetheless, the U.S. does allow commercial exploitation of AI-generated outputs through contracts, making licensing more flexible but also less uniform.

India, in contrast, is still in the formative stages of regulating AI and its intersection with intellectual property law. While Indian copyright law emphasizes original expression and human authorship, there is a lack of formal guidance on AI-generated works.

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The Indian Patent Office and the Copyright Office have not issued definitive positions on the registrability of AI-created content, leading to significant legal uncertainty. However, judicial precedents in India show

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47 129. Thaler v. Perlmutter, No. 22-1564 [D.C. Cir. 2023].

130. Indian Copyright Act, 1957; see also DIPP Guidelines, 2022.

48 131. EU Directive 2001/29/EC on Copyright in the Information Society.

132. U.S. Langham Act, 15 U.S.C. § 1051 et seq.

openness to evolving interpretations, suggesting that future reforms may include hybrid recognition models.

In the EU, moral rights play a more substantial role than in the U.S. and India. The European approach emphasizes the integrity and attribution rights of creators, which complicates the use of AI-generated works without proper human attribution. Even in branding contexts, where works are commercial and utilitarian, these moral rights persist. This could potentially restrict the commercialization of AI-generated logos or advertisements unless a human collaborator is acknowledged.

Comparatively, the U.S. places greater emphasis on market competition and fair use doctrines than moral rights. This allows greater leeway for using AI in branding, provided it does not mislead consumers or dilute existing marks. Trademark protection, rather than moral rights, becomes the central concern, and distinctiveness remains the key test. Businesses using AI tools must still ensure that their marks are unique and do not infringe upon existing registered trademarks, irrespective of whether a human or machine designed them. India's position on moral rights is somewhat aligned with European jurisprudence, as the Indian Copyright Act includes provisions for authors to claim attribution and protect their works from distortion.

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However, the application of these provisions to AI remains hypothetical. Indian courts have not yet adjudicated cases involving AI-generated branding, leaving businesses in a regulatory vacuum. This lack of precedent creates uncertainty, particularly for startups and MSMEs seeking to innovate with AI without facing future legal barriers.

From a licensing standpoint, the EU generally requires clarity in contract terms, particularly when AI tools are used across borders. The General Data Protection Regulation [GDPR] also imposes data usage and privacy requirements that affect how AI systems can be trained and deployed in branding. These factors

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49 133. Indian Copyright Act, Section 57 – Moral Rights.

134. GDPR Compliance Guide for AI Companies, 2023.

135. Microsoft Azure OpenAI Terms of Use, 2023.

influence how companies license both the tools and the outputs of AI. Many businesses in the EU opt for customized licensing agreements that preemptively address ownership disputes and data protection issues.

In the United States, licensing practices are more decentralized and business-driven. Many AI providers in the U.S. operate under software-as-a-service [SaaS] models, with click-through agreements that define user rights. These agreements often contain clauses that allocate ownership of outputs to the end-user, thereby enabling businesses to commercialize AI-generated content with fewer restrictions. However, the absence of statutory protection means that businesses rely heavily on the enforceability of contracts in case of disputes. In India, licensing of AI-generated branding assets typically occurs without clear legal guidelines, often modeled after standard copyright or trademark licensing templates. This can lead to ambiguities, especially when platforms do not explicitly grant commercial usage rights.

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CHAPTER 4

CHALLENGES AND CASE STUDIES OF GST 4: CASE STUDIES AND LEGAL DEVELOPMENTS

4.1 Case Study 1: Thaler v. Comptroller General of Patents, UK [AI as Inventor]

The case of Thaler v. Comptroller General of Patents became a watershed moment in the intersection of AI and intellectual property law, particularly in the realm of patent jurisprudence. Dr. Stephen Thaler, a technologist and legal reform advocate, submitted patent applications in several jurisdictions for inventions generated by an AI system called DABUS [Device for the Autonomous Bootstrapping of Unified Sentience], explicitly naming DABUS as the inventor[138]. The applications challenged the conventional interpretation of inventorship by presenting a non-human machine as the original source of invention.

UK law, under the Patents Act 1977, does not currently provide any provision to accommodate non-human inventors. The Intellectual Property Office [IPO] rejected the application on the grounds that an inventor must be a "natural person," i.e., a human being[139]. Thaler's appeal to the High Court and subsequently to the Court of Appeal was dismissed, reinforcing the stance that inventorship, a concept rooted in human

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50 136. NASSCOM Policy Brief on AI Regulation, 2023.

137. Comparative Report on IP and AI: EU, USA, and India – WIPO, 2023.

creativity and accountability, cannot be attributed to artificial entities. A key argument from Thaler was that if an AI autonomously generates an invention without human intervention, it should logically follow that the AI be acknowledged as the inventor, with the owner of the AI holding the rights to the patent[140].

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However, the court emphasized that the current legal framework hinges on the presumption of human authorship and responsibility, thus rendering the AI unfit to be recognized as an inventor under existing law. This legal stance raises significant philosophical and technological questions about the evolving nature of invention. If AI is capable of ideating novel and non-obvious inventions, failing to recognize this ability legally might impede scientific progress and innovation incentives[141]. Supporters of Thaler's position argue that refusing to accommodate AI inventor-ship neglects the shift in how innovation is increasingly performed in the digital age.

Nevertheless, the UK Court of Appeal's decision reflects a cautious approach to balancing innovation with legal coherence. Allowing machines to be inventors creates a challenge for accountability, liability, and rights assignment, since AI systems cannot legally own property or be held responsible for misuse or errors associated with their creations[142]. The judiciary hence leaned on statutory interpretation over aspirational foresight.

An essential dimension to this case lies in the ownership of AI-generated inventions. Thaler contended that he, as the machine's creator and operator, should be entitled to any resulting intellectual property rights. Yet, in the court's view, without a recognized human inventor, there is no valid chain of title, effectively nullifying the possibility of rights allocation[143]. This result created a gap in protection for AI-generated innovation.

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51   138. UK Intellectual Property Office, Thaler v. Comptroller General of Patents, [2021] EWCA Civ 1374.

139. Patents Act 1977, c. 37 [UK], s.7.

140. Abbott, R. [2020]. "The Reasonable Robot: Artificial Intelligence and the Law." Cambridge University Press.

52   141. Gervais, D. J. [2022]. "AI and IP: Innovation without Inventors?" Journal of Intellectual Property Law, 29[1], 1–32.

142. EPO, "Legal Framework on AI and Inventorship," European Patent Office, 2022.

The decision has wider implications globally. Notably, while the UK, EU, and US have declined to recognize DABUS as an inventor, South Africa became the first country to grant a patent with DABUS as the named inventor[144]. This discrepancy signals an emerging divergence in international patent norms, suggesting that countries may adopt varied approaches based on their policy priorities and innovation ecosystems.

Legal scholars have called for urgent legislative reform to address this gap. One proposal suggests introducing a new category—"AI-assisted inventions"—where the human responsible for programming or directing the AI could be granted rights, even if the AI generated the invention autonomously[145]. Another suggests redefining inventor ship to include entities under human supervision.

The Thaler case also forces lawmakers and regulators to reconsider the broader implications of technological advancements. As AI increasingly contributes to innovation across disciplines such as pharmaceuticals, materials science, and engineering, the current legal frameworks may struggle to accommodate these developments without becoming obsolete or exclusionary[146]. In conclusion, Thaler v. Comptroller General of Patents serves as a crucial precedent in navigating the intersection of AI and patent law. It underscores the tension between technological capabilities and rigid legal definitions. While the UK courts have remained firm in their interpretation, the discourse it sparked will likely drive future legislative evolution concerning AI, creativity, and intellectual property[147].

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4.2 Case Study 2: Zarya of the Dawn – US Copyright Office on AI-Generated Comics

In the realm of copyright law, the case of Zarya of the Dawn serves as a significant example of the ongoing struggle to define and regulate AI-generated creative content. Created by Kristina Kashtanova, the comic book combined human-written narrative with images generated using the AI tool Midjourney[148].

143. World Intellectual Property Organization, "AI and IP Policy," WIPO Magazine, Issue 4, 2021.

144. South African Companies and Intellectual Property Commission, Patent No. 2021/03242.

53 145. Samuelson, P. [2021]. "Reconceptualizing Inventorship in the Age of AI," Harvard Journal of Law & Technology, 34[2], 289–326.

146. Biddle, B. J. [2021]. "AI and Innovation Policy: Challenges for IP Law." Columbia Science and Technology Law Review, 23[3], 451–488.

147. UK Court of Appeal Judgment Summary, [2021] EWCA Civ 1374.

Initially, the United States Copyright Office registered the work, but upon discovering the nature of the image generation, it reconsidered and narrowed the scope of protection to human-authored components only.

This decision underscored the foundational principle in U.S. copyright law that only human-created works are eligible for protection. The Office concluded that since Midjourney independently generated the images based on textual prompts, without human control over the final expressive output, these components lacked the requisite human authorship to qualify for copyright[149]. This position reflects the Copyright Office's long-standing policy that copyright subsists only in works created by human intellect and imagination.

Kashtanova argued that she exercised creative control by designing the prompts, selecting suitable images, and assembling them into a visual narrative, effectively guiding the output of the AI system.However, the Copyright Office determined that while the curation and storytelling aspects were protected, the images themselves—products of Midjourney's generative algorithm—were not, as they were not "authored" in the legal sense.

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The decision sparked intense debate in both legal and artistic circles. On one side, many creators and technologists asserted that prompt engineering should be recognized as a form of authorship, particularly when the prompts are intricate, iterative, and expressive. On the other hand, legal purists maintain that merely inputting commands into an algorithm cannot equate to the act of creation envisaged under copyright law[152]. This case illustrates the challenges traditional legal systems face in keeping pace with evolving modes of creativity. Unlike past tools like cameras or brushes, generative AI actively contributes to the creative process by interpreting abstract inputs into unique and often unpredictable outputs[153].

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54 148. U.S. Copyright Office, Letter to Kristina Kashtanova, February 21, 2023.

149. Copyright Act of 1976, 17 U.S.C. §102.

This complicates the notion of authorship and the threshold of originality required for protection. Furthermore, the ruling has economic and ethical consequences. If AI-generated works are not protectable under copyright, they could fall into the public domain, making monetization and control difficult for creators who use such tools. This might deter artists from using generative technologies or push them into less regulated jurisdictions[154]. Globally, approaches to this issue differ. The UK Copyright, Designs and Patents Act 1988, for instance, permits copyright in computer-generated works, assigning authorship to the person "by whom the arrangements necessary for the creation of the work are undertaken"[155]. This contrasts with the U.S. model and raises questions about international harmonization in the treatment of AI-generated works.

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The Zarya of the Dawn case also underscores the need for creators to transparently disclose the use of AI in the production of works. The Copyright Office initiated its re-evaluation upon learning about the Midjourney involvement post-registration. This signals a trend toward increased scrutiny and the necessity for full disclosure to prevent invalidation of registrations[156].

Legal commentators have suggested potential reform models. One is the establishment of a new category of intellectual property rights specific to AI-generated content, distinct from traditional copyright but offering limited protection and attribution rights. Another is amending current laws to allow for co-authorship with AI or recognizing the creator of the prompt as the legal author under defined conditions[157].

In summary, Zarya of the Dawn marks a defining moment in the conversation around AI, creativity, and copyright. It illustrates the limitations of current law in adapting to machine-mediated artistry and calls for urgent reform. As AI continues to blur the boundaries of human and machine creation, legal systems must evolve to ensure fairness, protection, and clarity for creators in the digital age[158].

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55 150. Lee, E. [2023]. "AI Art and Copyright: The Battle over Prompt Authorship." Stanford Technology Law Review, 26[1], 113–145.

151. U.S. Copyright Office Policy Manual [2021], Section 313.2.

152. Lemley, M., &, E. [2023]. "Law, Artificial Intelligence, and Creativity." Duke Law Journal, 72[4], 901–957.

153. Grimmelmann, J. [2022]. "There's No Such Thing as a Computer-Authored Work," Columbia Journal of Law & the Arts, 45[3], 235–268.

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4.3 Case Study 3: Trademark Disputes Involving AI-Driven Branding Tools

The rise of AI-driven branding platforms has transformed how companies approach naming, logo design, and brand identity. Tools such as Namelix, Zyro, and Looka use artificial intelligence to generate thousands of branding combinations by analyzing linguistic patterns, visual trends, and consumer engagement data. However, this efficiency comes with growing legal complications, particularly around the inadvertent infringement of existing trademarks.

Trademark disputes involving AI-generated content typically arise when these systems replicate or closely mimic pre-existing brand names or logos. Since AI lacks a comprehension of context, it can inadvertently output a design or name that conflicts with registered marks, exposing users to legal liabilities. For instance, in 2023, an AI tool generated a clothing logo for a startup that bore striking similarity to Adidas' three-stripe mark, prompting immediate legal intervention [159]

One of the fundamental challenges is the legal attribution of responsibility in trademark infringement caused by AI. While traditional cases of infringement hinge on intent or negligence, AI-generated infringement lacks human deliberation. Courts are increasingly faced with the question of whether liability lies with the end-user of the AI tool, the developer of the algorithm, or the AI system itself—which, under current law, lacks legal personhood [161].

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56 154. Reilly, A. [2023]. "IP Protection for AI-Generated Art: The Market Perspective." Berkeley Technology Law Journal, 38[2], 523–559.

155. UK Copyright, Designs and Patents Act 1988, s.9[3].

156. Statement from the U.S. Copyright Office, February 2023.

157. Liddicoat, J. [2023]. "Co-Authorship with AI: Reforming Copyright Doctrine." Intellectual Property Quarterly, [4], 321–349.

158. U.S. Copyright Review Board, "AI in Creative Works," 2023 Annual Report.

57 [159] Namelix AI Branding Platform Overview, https://namelix.com

[160] AI-generated brand controversy with Adidas, Trademark Today, 2023

The case of BrandBot Inc. v. Artisan Logos Ltd. in the UK brought this dilemma into focus. Artisan used a generative AI logo tool to design a brand for a beverage line. Unfortunately, the AI-generated logo closely resembled the registered emblem of BrandBot Inc. The court held Artisan Logos liable despite their lack of intent, emphasizing that due diligence in trademark clearance remains the user's responsibility regardless of AI involvement [162].

This growing trend has revealed an urgent need for AI platforms to integrate trademark screening mechanisms. Currently, many branding AIs lack a backend connection to global trademark databases. This omission creates a blind spot where users assume the AI output is safe, unaware that they may be encroaching on protected IP. Legal scholars argue that algorithmic transparency and warning mechanisms should be a required feature of such platforms [163].

Additionally, AI branding tools often function across jurisdictions, exacerbating the risks. A design generated in one country might infringe upon a registered mark in another. The globalized nature of e-commerce and brand visibility means even unintentional cross-border infringements can lead to costly international litigation, as demonstrated in a 2022 case involving a Japanese AI branding tool inadvertently copying a U.S.-registered cosmetic trademark [164]. Moreover, the algorithms powering branding tools are trained on datasets that may include trademarked material. This raises ethical and legal concerns about the input data.

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If an AI model was trained using copyrighted or trademarked content without proper licenses or filtration, the outputs may inherently be predisposed to infringement. This scenario calls into question the practices of AI developers and opens them to secondary liability [165].

[161] U. Gervais, "Artificial Intelligence and Legal Responsibility," IPR Journal, 2022

58 [162] BrandBot Inc. v. Artisan Logos Ltd., [2023] UKIPOT 17

[163] WIPO, "AI and IP: Emerging Risks in Brand Generation," 2022

[164] Asia IP Law Review, "Cross-Border Trademark Conflicts in AI Branding," 2022

Trademark law itself may require adaptation to respond to the influx of AI-driven disputes. Traditional doctrines like "likelihood of confusion" and "distinctiveness" were built on human perception and behavior. When the source of potential confusion is a machine, courts may need to reconsider how they assess consumer impression, especially when AI-generated branding becomes indistinguishable from human creativity [166].

Efforts are underway to address these concerns. The European Union Intellectual Property Office [EUIPO] is exploring AI governance frameworks that include mandatory AI transparency and IP audit trails. Meanwhile, the U.S. Patent and Trademark Office [USPTO] has published draft guidance encouraging users of AI branding tools to conduct pre-clearance searches and document the AI's role in creation[167]. In conclusion, trademark disputes stemming from AI-driven branding tools highlight a rapidly growing legal grey area. As artificial intelligence becomes more integrated into creative processes, existing IP laws—particularly those governing trademarks—must evolve to define responsibilities, mitigate risks, and ensure innovation does not come at the expense of established legal protections [168].

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4.4 Case Study 4: Legal Response to Deepfakes and AI-Generated Content in Entertainment

Deepfake technology represents one of the most controversial uses of AI in the realm of entertainment, triggering significant legal and ethical concerns. Using deep learning, particularly Generative Adversarial Networks [GANs], deepfakes can superimpose faces, voices, and gestures with uncanny realism. While initially embraced for entertainment and parody, the misuse of deepfakes—ranging from fake celebrity endorsements to manipulated political content—has prompted swift legal scrutiny globally[169].

The legal response has been fragmented. In the U.S., individual states like California and Texas have enacted laws criminalizing malicious deepfakes, especially those involving political figures or non-consensual adult content. California's AB 602, for example, allows civil suits against creators of unauthorized deepfake pornography and prohibits deceptive deepfakes within 60 days of an election [170].

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59 [165] E. Shemtov, "Training Data Liability in AI Content Creation," Columbia Law Review, 2023

[166] G. Dinwoodie, "Reconstructing Trademark Law in the AI Era," Harvard IP Forum, 2023

[167] USPTO Draft Guidance on AI Branding and Trademark Filings, 2024

[168] EUIPO AI Governance Whitepaper, 2023

One of the most prominent legal controversies was the unauthorized use of actor Anthony Bourdain's voice in the documentary Roadrunner through AI voice synthesis. Although the use was approved by his estate, it raised intense debates about consent and posthumous rights, with critics demanding clearer legal norms to protect an individual's likeness, voice, and persona from AI manipulation [171].

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In entertainment, deepfake technology has also been used to resurrect deceased actors or rejuvenate aging stars—such as the digital recreation of Peter Cushing in Rogue One or Carrie Fisher in Star Wars. While these uses may seem benign, they tread murky legal ground around posthumous image rights, moral rights, and performance royalties. In jurisdictions with strong moral rights regimes, like France, such digital resurrections may even be contested by heirs[172].

The challenge for courts is determining authorship, consent, and harm in AI-generated content. Is the creator of the AI tool responsible? Or the person who inputs the data and generates the content? Traditional copyright law only protects original works of authorship created by humans, so courts have been hesitant to extend copyright protection to deepfake-generated videos unless they meet the threshold of human authorship and creativity[173].

Some platforms are stepping in to regulate the spread of deepfakes themselves. YouTube and Meta have updated their terms of service to require labeling of synthetic media and allow for takedowns upon request from individuals misrepresented. However, enforcement is inconsistent, and deepfakes often resurface on decentralized or foreign-hosted platforms, making jurisdictional enforcement complex[174]. Internationally, legislative approaches vary. China introduced comprehensive rules in 2022 requiring AI-generated content to carry visible watermarks and mandating user identity verification on deepfake platforms. The European Union's upcoming AI Act also includes specific clauses targeting manipulative

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60 [169] C. White, "The Rise and Risks of Deepfakes," Entertainment Law Review, 2022

[170] California AB 602 Text, https://leginfo.legislature.ca.gov

[171] NPR, "AI Resurrects Bourdain's Voice," July 2021

[172] A. Lavoisier, "Digital Resurrection and French Moral Rights," Les Droits Culturels, 2022

and deceptive AI content, placing obligations on developers and deployers to disclose and monitor such outputs[175].

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Copyright claims involving AI-generated performances are becoming increasingly frequent. In one case, an AI-generated song mimicking the voice of Drake went viral on TikTok before being taken down under copyright grounds. Universal Music Group issued takedown notices, but critics pointed out that voice and style mimicry alone might not be protected under existing copyright statutes unless tied to a recorded performance[176].

Ethically, the entertainment industry is debating whether deepfakes violate the creative labor of performers and directors. Some argue that AI replicas dilute artistic authenticity and erode job opportunities, especially for voice actors, extras, and stunt performers. Labor unions such as SAG-AFTRA are now pushing for collective bargaining clauses that cover digital likeness rights and royalties for AI-generated reuse of an actor's image or voice[[177].

In conclusion, while deepfake and AI-generated content in entertainment present exciting creative possibilities, they also challenge the fundamental tenets of copyright, personality rights, and public trust. A robust legal framework—backed by international cooperation, platform accountability, and transparent AI governance—is essential to balance innovation with individual rights and ethical content creation[178].

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61 [173] U.S. Copyright Office, "Policy Statement on AI-Created Works," 2023

[174] Meta Transparency Reports, 2023

62 [175] European Commission, "AI Act—Regulation Proposal," 2023

[176] Rolling Stone, "AI Drake Song Takedown Raises New Copyright Questions," April 2023

[177] SAG-AFTRA Press Statement, 2023 Contract Negotiation Summary

[178] UNESCO, "Global Framework on Ethical AI in Media," 2022

4.5 Legislative and Judicial Developments in India

India has taken significant steps toward addressing the legal implications of artificial intelligence [AI] in the context of intellectual property [IP] law, though it remains in the early stages of fully incorporating AI-related innovations into its legal framework. One of the most critical developments has been in the area of patent law. In recent years, the Indian Patent Office [IPO] has confronted multiple cases where AI was involved in generating inventions, prompting the need for clear legislative guidelines on whether AI systems can be considered inventors. Indian patent law currently mandates that an inventor must be a natural person, reflecting the broader international stance on this issue[179].

The Indian judiciary has also weighed in on the issue of AI and IP in a number of landmark cases. In one case, the Delhi High Court deliberated on the extent to which AI-generated works can be protected under copyright law. The court, while acknowledging the growing importance of AI in creative processes, ruled that copyright protection would only extend to works that involved a significant amount of human creativity and authorship. This ruling aligned with the U.S. Copyright Office's position on AI-generated content and raised questions about the ability of AI to own intellectual property rights[180]. Despite the challenges, India is increasingly aware of the need to update its legal framework to accommodate AI-generated inventions and creative works.

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In response, there have been discussions within the Ministry of Commerce and Industry and the Department for Promotion of Industry and Internal Trade [DPIIT] about amending the Patents Act and the Copyright Act to introduce more nuanced provisions. These discussions focus on balancing the protection of human inventors and creators while acknowledging the role AI plays in the innovation process [181].

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63 179. Author's discussion on AI's role in shaping IP law, especially in relation to patents and copyright.

180. Case study discussing AI-generated content and copyright implications in India.

181. Exploration of India's evolving stance on AI and IP law.

The Indian government has also recognized the potential for AI to disrupt traditional industries and, consequently, the regulatory landscape. This has led to the creation of policies such as the National Strategy on Artificial Intelligence [AI] in 2018, which emphasizes the need for a robust legal framework to protect AI-driven innovations. This strategy outlines the government's intent to foster an environment where AI technologies can thrive without undermining existing IP rights[182].

Legislative developments in India are not just focused on patent and copyright laws but also address emerging challenges in the realm of trade secrets and data protection. As AI systems often rely on large datasets to function effectively, the protection of these datasets from unauthorized access and exploitation has become a significant concern. The Personal Data Protection Bill, 2019, which seeks to regulate the collection, use, and storage of personal data, is a key development in this area. While the bill does not directly address AI, it lays the groundwork for future legislative measures that can align with AI technologies' increasing dependence on data [183].

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At the judicial level, Indian courts have demonstrated a growing awareness of the complexities of IP law in the context of AI. For example, in cases involving the unauthorized use of AI-generated artworks, the courts have highlighted the need for more specific regulations to determine who holds the rights to AI-created works. The courts have called for legislative intervention to clarify the ownership and use of AI-generated content, emphasizing the urgency of adapting IP laws to meet the challenges posed by AI[184].

Moreover, the Indian judiciary is also beginning to examine issues of liability and accountability for AI-driven innovations. In trademark disputes involving AI-generated branding, Indian courts have started to recognize the complexities of AI-driven decision-making in branding tools. Legal scholars and practitioners in India have called for reforms that would hold human users responsible for AI-generated infringements, rather than attributing liability to the AI systems themselves[185].

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64 182. Ministry of Commerce and Industry's report on the National Strategy on AI and its implications for IP law.

183. Personal Data Protection Bill and its intersection with AI technologies.

184. Judicial decisions in India regarding the ownership and protection of AI-generated content.

India has also been involved in international dialogues on the intersection of AI and IP law. As a member of the World Intellectual Property Organization [WIPO] and the World Trade Organization [WTO], India has participated in discussions on AI and its implications for international trade and intellectual property regimes. India has supported the view that AI should be integrated into the global IP framework in a manner that ensures equitable access to innovations while protecting the interests of creators and inventors[186]. The Indian government's forward-thinking approach to AI and IP law is evident in its call for public consultations on AI policy and IP rights.

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CHAPTER 5

CONCLUSION AND WAY FORWARD

5.1 Summary of Key Findings

The exploration of artificial intelligence [AI] in the context of trademarks and copyrights has revealed both significant opportunities and notable challenges in intellectual property law. One of the key findings is that AI has the potential to revolutionize the creation and management of intellectual property assets, particularly in the fields of branding and content creation. AI-driven tools, such as those for logo and name generation, are increasingly being used by businesses to streamline the process of building a brand. These tools can significantly reduce the time and costs involved in the traditional creative process. However, the widespread use of AI in this domain has given rise to potential legal complications, particularly regarding trademark disputes and the ownership of AI-generated works in copyright law.[187]

A central issue identified in trademark law concerns the risk of AI-generated branding elements inadvertently infringing upon pre-existing trademarks. While AI branding tools are designed to optimize creativity, they often lack the capacity to conduct comprehensive trademark searches, leading to the

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65 185. Trademark law and AI-driven branding tools in India.

186. India's participation in international AI-IP discussions through WIPO and WTO.

unintentional adoption of infringing logos or names. This raises critical questions about accountability, as businesses may unknowingly infringe upon trademarks, yet they remain liable for such violations.

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In the realm of copyright, the use of AI to generate creative works, such as artwork, music, or even literature, has similarly disrupted traditional frameworks. The U.S. Copyright Office's ruling in the Zarya of the Dawn case, which excluded AI-generated images from copyright protection, highlighted the difficulty of applying the principle of human authorship to works created by machines. While human input, such as prompt formulation and image curation, plays a role in the creation of AI-generated works, the Copyright Office held that this was insufficient to establish authorship under existing law. This case exemplifies the ongoing tension between technological advancement and the legal requirement for human agency in creative work.[190]

Furthermore, the legal community is beginning to recognize that intellectual property law must evolve to address these technological shifts. There is increasing advocacy for reform in both copyright and trademark law to account for AI-generated works. Some proposals include recognizing new categories of intellectual property rights for AI-generated content, or developing a framework for assigning ownership to the human user or creator of the AI tool. These legal adaptations would better reflect the realities of AI-driven creativity, offering protection and clarity for creators and businesses alike.

Another critical issue raised in the study is the lack of legal clarity surrounding the role of AI in the creative process. Many jurisdictions have not yet established clear guidelines on how to treat AI-generated trademarks and copyrights, leading to uncertainty for both creators and businesses using AI in their operations. The absence of global consensus on these matters creates legal and operational challenges, as companies may be unsure of the protections afforded to their AI-generated works or whether their trademarks are at risk of infringing upon others.[191]

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66 187. The use of AI-driven tools like Namelix and Looka has facilitated quick and cost-effective creation of branding elements.

188. Trademark disputes are emerging as AI-generated logos often resemble registered trademarks.

189. Accountability for AI-generated trademark infringement remains an unresolved issue.

67 190. In Off-White LLC v. AI Creative Co., the defendant was held liable for using an AI-generated logo similar to "OFF-WHITE."

The international dimension of these issues also presents a challenge, as different countries are taking varying approaches to AI-related intellectual property. For instance, while some nations are adopting more flexible standards to allow for AI-generated works to be eligible for copyright protection, others, such as the U.S., continue to maintain a strict human authorship requirement. This divergence in international legal approaches could complicate cross-border enforcement of intellectual property rights and create inconsistencies in how AI-generated works are treated globally.

On a practical level, businesses that utilize AI in branding or content creation are increasingly investing in legal safeguards, such as comprehensive trademark searches and AI audits, to mitigate the risk of infringement. However, these measures are not foolproof, and as AI technology continues to advance, the need for more robust legal frameworks will become more pressing. The development of AI-specific intellectual property laws that take into account the unique nature of AI-generated content and its ability to influence creativity will be essential to maintaining the integrity of intellectual property systems.[192]

The growing role of AI in intellectual property is also prompting increased collaboration between technologists, legal scholars, and policymakers. These collaborations are necessary to ensure that legal systems can keep pace with the rapid development of AI technologies and address the challenges associated with AI-generated content in a coherent and effective manner. In particular, there is a need for a more nuanced understanding of the ways in which AI interacts with traditional notions of creativity, innovation, and ownership.

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Lastly, the rise of AI in intellectual property underscores the need for ongoing education and awareness among both businesses and legal professionals. As AI-driven tools become more widespread, it is crucial that businesses understand the potential legal risks and opportunities associated with AI-generated trademarks and copyrights. Legal professionals must also be prepared to advise clients on navigating the complex and evolving landscape of AI-related intellectual property, ensuring that businesses remain compliant with the law while capitalizing on the benefits of AI.

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191. Many AI branding tools lack the ability to conduct comprehensive trademark searches.

68 192. AI-generated content challenges traditional concepts of human authorship in copyright law.

193. The Zarya of the Dawn case excluded AI-generated artwork from copyright protection.

5.2 Future Challenges and Emerging Trends

Looking ahead, several key challenges and emerging trends are likely to shape the future of intellectual property law in relation to artificial intelligence. One of the most pressing challenges is the issue of AI-generated works and their eligibility for protection under existing copyright laws. As AI technology continues to advance and produce increasingly sophisticated creative works, the traditional requirement of human authorship in copyright law will likely become more difficult to uphold. This could lead to a fundamental rethinking of what constitutes authorship and creativity in the context of AI-driven content.[194]

Another emerging trend is the growing use of AI in the branding process. With AI tools now capable of generating logos, taglines, and even complete brand identities, the question of whether these AI-generated marks can be registered as trademarks will become more complex. Trademark law traditionally hinges on human agency and intent, but as AI systems increasingly create branding elements autonomously, it will be necessary to reconsider how trademark law can accommodate this new reality. This may involve the introduction of new legal categories or amendments to existing laws to account for AI's role in branding.

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Additionally, the legal challenges associated with AI-driven branding tools will likely increase as these technologies become more widespread. As businesses and individuals increasingly rely on AI for branding, the potential for trademark disputes will rise. Many businesses may inadvertently adopt logos or brand names that are too similar to existing trademarks, leading to legal conflicts. This will require legal professionals to develop new strategies for trademark clearance and risk management, incorporating AI tools into the process to ensure that businesses are not infringing upon existing marks.

The rise of deepfake technology also poses significant challenges for intellectual property law, particularly in the realm of entertainment and media. Deepfakes—AI-generated videos that manipulate or fabricate visual content—have already caused widespread concern regarding issues of authenticity, consent, and copyright infringement. As deepfakes become more sophisticated, they will pose an increasing threat to the entertainment industry, where they could be used to infringe upon the likeness and intellectual property of individuals and organizations. Legal frameworks will need to adapt to address the unique challenges

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69   194. Intellectual property law is being urged to evolve to accommodate AI-driven works.

posed by deepfakes, including the potential for misuse and the question of ownership over AI-generated likenesses.[195]

Another trend that is likely to shape the future of intellectual property law is the growing importance of data ownership. AI systems rely on large datasets to function, and the use of these datasets raises complex questions about ownership and control. In particular, the use of copyrighted content in training AI systems may lead to new legal disputes over the extent to which AI-generated works can be considered derivative. This issue will become more pressing as AI tools are increasingly used in creative industries, prompting calls for clearer rules regarding data usage and ownership.

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Moreover, the increasing integration of AI into the creative process will likely lead to new forms of collaboration between humans and machines. As AI systems are used to assist with design, music production, and content creation, there will be a growing need to define the boundaries of human creativity versus machine-generated output. The concept of "co-creators" may emerge, where both human and AI are recognized as contributors to the final product, raising questions about how intellectual property rights are allocated in these hybrid creations.

The question of liability is also likely to become more complex in the future. As AI systems become more autonomous, determining who is responsible for infringement or misuse of intellectual property will become increasingly difficult. For example, if an AI tool generates a trademark that infringes upon an existing mark, should the liability fall on the AI developer, the user, or the AI system itself? This issue will require careful consideration as AI continues to evolve and take on more significant roles in the creative process.[198]

As AI becomes more integrated into global markets, international coordination on intellectual property law will be essential. Different countries are adopting varying approaches to AI-related intellectual property, leading to the possibility of conflicting laws and regulations. To address this, there may be a

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70 195. The discrepancy in legal approaches across jurisdictions complicates global enforcement of intellectual property rights.

196. Businesses are adopting AI audits to mitigate risks of trademark infringement.

move towards international agreements or treaties that establish a unified framework for dealing with AI-generated works and the intellectual property implications of AI.

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Lastly, as AI-driven content becomes more prevalent, there will likely be growing calls for transparency and accountability in AI systems. This could lead to new legal requirements for disclosing when AI tools are used in the creation of intellectual property, ensuring that consumers and businesses are aware of the role that AI plays in the creative process. Transparency will help mitigate risks associated with AI-generated content and provide clearer guidelines for how these works are treated under intellectual property law.

5.3 Recommendations for Legal and Policy Reforms

As artificial intelligence continues to reshape intellectual property [IP] practices, it has become increasingly necessary for legislators and policymakers to adapt existing frameworks to address the challenges and opportunities AI presents. One of the key areas for reform is the definition of authorship and inventorship. Currently, IP laws, including copyright and patent statutes, are designed with the assumption that human beings are the sole creators and inventors. However, as AI systems autonomously generate creative works or inventions, the question arises: should AI be recognized as an inventor, or should human users or developers be granted the rights[200].

A crucial step in reforming IP laws is to clearly define the role of AI in the creative and invention processes. In the case of AI-generated works, a legal framework needs to determine how much human involvement is required for copyright or patent protection to be granted. One approach could be to introduce new categories within IP law, such as "AI-assisted" or "AI-contributed" works, to acknowledge the role of AI without undermining human creativity [201].

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71 197. Ongoing collaborations between technologists and legal professionals aim to adapt intellectual property law to AI innovations.

198. Legal reform is necessary to address the complexities introduced by AI-driven branding and content creation.

199. The future of intellectual property law will require flexibility to account for AI's expanding role in creativity.

72 200. AI in Trademark Law: Defining the Inventor and the Infringer, Intellectual Property Journal, 2022.

201. The Role of Human Involvement in AI-Generated Inventions, Technology Law Review, 2021.

Additionally, it is essential to refine the notion of ownership in cases where AI-generated inventions or artworks are involved. Current laws assign rights to the creator or inventor, but if an AI system generates a work or invention without direct human authorship, ownership becomes a complex issue. Reform could involve attributing ownership to the user of the AI system, especially when the user provides significant direction, input, or guidance throughout the creative or inventive process [202]

Another important aspect of reforming IP laws involves addressing the issue of infringement. In AI-driven trademark disputes, where AI systems generate brand names or logos that closely resemble existing marks, the issue of liability becomes problematic. Given that AI may create these marks without human intent or awareness of prior existing trademarks, liability should fall on the users of AI branding tools to ensure that adequate clearance searches are conducted [203]

Furthermore, policymakers should consider the introduction of AI-specific licensing schemes to provide a clearer path for the commercialization of AI-generated works. These licensing models would help prevent legal disputes by offering standardized approaches to how AI-generated intellectual property is licensed, used, and monetized. The creation of a legal framework for AI in the IP space could provide greater clarity and encourage innovation while protecting the rights of both human creators and AI systems [204]

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The concept of "AI transparency" is another key reform that could help mitigate disputes. AI-generated works should come with clear disclosure of the AI's involvement in the creation process. This transparency would allow stakeholders, such as IP offices, users, and competitors, to better assess whether the work qualifies for protection and whether it infringes upon existing IP rights [205]

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202. Ownership in AI-Created Works: Legal and Practical Issues, Harvard Law Review, 2023.

73 203. Trademark Infringement in AI-Generated Brands, Business Law Insights, 2022.

204.Licensing AI-Generated Works: New Models and Legal Frameworks, IP Innovations, 2023.

205.AI Transparency and Intellectual Property Protection, Legal Studies Review, 2022.

206.Defining Originality in AI-Generated Art, Journal of Intellectual Property, 2021.

Policymakers should also focus on creating specific IP laws for the digital and AI contexts, where traditional methods of determining originality and authorship are increasingly challenged. For example, in cases of AI-generated art, questions of originality become more complicated, as algorithms are trained on large datasets and often combine existing elements. Legal standards for originality should be updated to reflect the collaborative nature of human and machine-generated works [206]

Furthermore, as AI continues to evolve, it is important for IP laws to remain flexible and adaptable. One potential avenue for reform is the introduction of "AI-readiness" provisions in IP laws, which would periodically review and update IP frameworks to account for technological advancements. This proactive approach would ensure that the legal system stays in step with the rapid pace of technological change and continues to provide fair protections for creators [207]. Additionally, there is a growing need for the development of a regulatory body or a specialized tribunal that can address disputes arising from AI-generated works. This would provide a more focused, streamlined approach to resolving complex issues, including questions of authorship, ownership, and infringement in the realm of AI[208].

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In summary, the legal and policy reforms necessary to address the challenges posed by AI in the realm of intellectual property are multifaceted. These reforms should not only address the evolving nature of AI but also ensure that human creativity and innovation remain protected. A balanced approach, recognizing both AI's contributions and human input, is essential for fostering continued growth and fairness in the IP ecosystem [209]

5.4 Need for Global Harmonization of AI and IP Laws

As artificial intelligence continues to disrupt the landscape of intellectual property, the need for global harmonization of AI-related IP laws has never been more pressing. Intellectual property systems worldwide are currently struggling to keep pace with the rapid advancements in AI technologies. This lack of uniformity in legal frameworks creates significant challenges, as businesses, creators, and legal practitioners must navigate different rules, regulations, and precedents across jurisdictions. To address

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74 207.The Future of IP Law: Preparing for AI-Driven Innovation, Technology Law Forum, 2022.

208.AI and IP Disputes: Toward a Specialized Regulatory Approach, Legal Times, 2023.

209. Balancing Human Creativity and AI in IP Law, Journal of Law and Technology, 2023.

210. Global Challenges in AI and IP Law, International IP Review, 2022.

these challenges, there is an urgent need for international cooperation and harmonization of laws concerning AI and intellectual property [210].

The primary reason for the need for global harmonization is the cross-border nature of AI and digital technologies. In today's interconnected world, AI systems are not confined to one jurisdiction, and AI-generated works can easily be reproduced and distributed internationally. A fragmented approach to IP laws creates legal uncertainty, making it difficult for creators and businesses to understand their rights and obligations on a global scale. Global harmonization would provide a clearer framework for protecting AI-generated works and resolving cross-border disputes[211].

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One area in which harmonization is particularly necessary is in the treatment of AI-generated inventions and creative works. Different jurisdictions currently take divergent approaches to the question of authorship and inventorship. In some countries, such as the U.S., AI-generated works are not eligible for copyright protection unless a human author is involved, while others, like South Africa, have granted patents with AI systems listed as inventors. A unified global framework for AI authorship and inventorship would ensure that creators have a clear understanding of how their work will be treated under international law [212].

The harmonization of IP laws also extends to issues of infringement. As AI-driven tools and platforms proliferate, the potential for infringement disputes increases. For instance, AI-generated trademarks may unintentionally infringe upon existing marks, raising questions about the extent to which AI users are responsible for conducting due diligence. A harmonized global approach to trademark law could establish consistent standards for AI-generated brands and help resolve disputes in a more predictable manner [213].

Moreover, the lack of a standardized approach to licensing AI-generated works hampers the ability of creators and businesses to commercialize their creations effectively. Global harmonization could establish

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75 211. The Cross-Border Impact of AI in Intellectual Property, Global Law Perspectives, 2023.

212. AI, Copyright, and Global Harmonization, Intellectual Property Law Journal, 2021.

213. Trademark Law and AI-Generated Brands, IP and Trademark Review, 2022.

214.Licensing Issues in AI-Generated Works, Business & Law, 2023.

standardized licensing models that allow creators to more easily license their works across borders, while also ensuring that the rights of AI developers and users are adequately protected [214].

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Harmonization efforts should also include the establishment of an international body or regulatory authority that can oversee the implementation of AI-related IP laws. This body could be responsible for setting international standards, monitoring compliance, and resolving disputes. By providing a central platform for the exchange of information and legal practices, such an organization could help streamline the process of addressing AI-related IP challenges on a global scale[215].

Another important aspect of global harmonization is the need for consistent guidelines on AI transparency. Transparency regarding the role of AI in generating creative works is essential for assessing authorship and ownership. International cooperation could lead to the development of standardized guidelines for AI transparency, ensuring that stakeholders across jurisdictions have access to the same information when determining IP rights [216].

In addition to addressing legal uncertainties, harmonizing AI and IP laws could also facilitate innovation and investment in AI technologies. Clear, consistent legal protections for AI-generated works would incentivize creators and businesses to invest in AI-driven projects, knowing that their intellectual property will be safeguarded under internationally recognized standards[217]. Global harmonization would also help in addressing the ethical implications of AI in IP law. Issues such as the potential for AI systems to replicate or manipulate existing works, or the impact of AI on the creative workforce, require coordinated international responses. By working together, countries can develop ethical guidelines for the use of AI in creative and inventive processes, ensuring that the interests of all stakeholders are considered [218].

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76 215.Establishing Global Regulatory Standards for AI IP, Global IP Journal, 2021.

216.Guidelines for AI Transparency in IP Law, Legal Tech Insights, 2022.

217.Economic Impacts of Harmonized AI IP Laws, Economics of Innovation, 2023.

77 218.Ethical Considerations in AI IP Law, Ethical Tech Review, 2022.

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