THE ETHICS OF INNOVATION: PATENT LAW AND DESIGN DILEMMAS

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Abstract: This article explores the ethical dilemmas at the intersection of patent law and design innovation, using the Apple v. Samsung case and Shenzhen-based Transsion Holdings as focal points, analyzed through the lens of human-centered design. It also highlights the benefits of an open-source approach by drawing on SpaceX as an illustrative example. Apple v. Samsung highlights challenges in enforcing design patents, balancing intellectual property rights with market competition and innovation. Transsion's evolution from imitation to addressing camera bias for darker skin tones demonstrates how inclusive design can foster equity and reshape markets. The analysis calls for flexible intellectual property frameworks that protect creators while promoting user-centered innovation, addressing systemic inequities, and aligning technology with human rights and societal progress.

Keywords: Human-Centered Design; Trade Dress; Patent Law; Intellectual Property Law; Business Ethics

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INTRODUCTION

Design is both an aesthetic and functional process, requiring legal compliance while fostering innovation. The interplay between design and law is a critical area of study in contemporary society. Integrating design thinking into legal processes is hindered by cultural differences: law emphasizes formality and precedent, while design values flexibility and experimentation. Bridging these gaps through interdisciplinary collaboration can align intellectual property laws with human-centered design,[1] eventually contribute to societal progression and well-being. This intersection is particularly significant in the realm of intellectual property law, where design patents serve to protect innovation while simultaneously presenting complex challenges regarding their broader impact on technological advancement.

The legal disputes between Apple and Samsung over design patents focused on how intellectual property law would define range of originality and infringement, therefore how should damage reward amount be. The prolonged patent litigation highlights differences in their business models and legal strategies. Apple, focused on software and design innovation, initiated lawsuits over alleged infringement of its design and utility patents. Samsung, emphasizing hardware manufacturing, countersued with its own patent claims. The cases, spanning multiple jurisdictions, underline disparities in legal systems and patent enforcement. While Apple won significant damages, Samsung gained brand recognition and enhanced its intellectual property practices, ultimately benefiting both companies in the global market.[2] While establishing the commercial value between the two parties is important, the essence of patent damages lies in the principle: "The damages you award should compensate the patent holder, not punish the infringer",[3] exemplify the intricate balance between safeguarding intellectual property and fostering innovation. Fear, as a psychological process, can constrain the motivations of acting, eventually preventing the progression of innovation, as companies may be afraid of the high damage infringement reward so never borrowing ideas from industry pioneers. Therefore, legal frameworks should provide an environment that is inclusive enough to encompass diverse opinions and behaviors with flexibility.

Additionally, the case of Shenzhen's Transsion Holdings underscores the complex relationship between legal frameworks and human rights. Transsion's initial strategy involved replicating existing technologies; however, the company gained significant popularity in African markets by addressing specific user needs that were previously overlooked, such as optimizing camera technology for individuals with darker skin tones. This scenario raises important ethical considerations regarding the enforcement of intellectual property rights and the promotion of inclusive innovation.

This article examines the intersection of design and law through the lens of human-centered design's principles, focusing on Apple v. Samsung and the trajectory of Transsion Holdings. The article aims to explore the ethical and practical

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[1] Marcelo Corrales et al., *The Relationship between Legal and Design Cultures: Tension and Resolution*, SSRN (2021).

[2] The Apple Patent Fight Between Apple and Samsung: Interviews with Korean and Korean-American Attorneys, UC IRVINE SCH. LAW, https://www.law.uci.edu/centers/korea-law-center/news/klc-samsung-apple.pdf.

[3] Paul Grewal et al., *MODEL PATENT JURY INSTRUCTIONS*, (2017), https://www.cand.uscourts.gov/filelibrary/5/NDCAL_Model_Pat_Jury_Inst_8-17_updated_12-18.pdf.

implications of current intellectual property frameworks and their influence on innovation. The goal is to contribute to the ongoing discourse on how legal systems can effectively balance the protection of creators' rights with the necessity of fostering a competitive but inclusive innovative environment.

I. DESIGN PERSPECTIVE

The Apple v. Samsung case of 2012 warrants detailed discussion and analysis due to the significant legal principles it established, which have had a lasting impact on the design industry. The case raised critical questions about the scope and limitations of design patents, particularly regarding how these patents can restrict the protection of appearance designs. It also prompted further exploration of the boundaries of legal protection for design elements, such as the definition of "ornamental" versus "functional" features, the potential for design patent infringement based on overall visual impressions, and the extent to which trade dress law can extend beyond traditional product designs. These legal developments have shaped how designers and companies approach the protection of their creative works and have influenced patent law interpretations across various industries.

In the human-centered design realm, a nuanced perspective on the tension between originality and borrowing was developed. Design courses often follow a structured process: presenting original ideas, creating prototypes, refining designs, and ultimately showcasing polished design work to the class. Each stage involves collaborative sharing, which has both advantages and drawbacks. While designers gain exposure to diverse perspectives and creative approaches, they may also be influenced by others' ideas, sometimes at the expense of their own original vision.

Many educational institutions do not oppose the mutual borrowing of ideas as a way to foster students' growth, provided a new perspective to approach the boundaries of originality. The contrast between the stringent enforcement of educational institutions' honor code in academic settings—where plagiarism and improper citations are strictly prohibited—and the more lenient approach to originality in design raised questions of the lack of institutional or professorial mechanisms to address such issues.

However, from a broader context, the innovation and originality are not opposed but mutually reinforcing. A crucial step in initiating a successful design is creating a "mood board," a visual tool that conveys the project's overall tone, style, and direction. It acts as a curated collage of images, colors, textures, typography, and other design elements, collectively inspiring and defining the desired aesthetic. Drawing inspiration from others' work often serves as a precursor to originality, providing a foundation for novel ideas to emerge. Claude Lévi-Strauss, a pioneer of structuralism, captured this dynamic in *The Savage Mind* (*La Pensée Sauvage*), arguing that creativity is not about creating from nothing but recombining existing elements. He introduced the concept of "bricolage," likening innovators to tinkerers who use available materials to craft something new. This process of reinterpreting and reorganizing pre-existing cultural components, evident in both primitive societies and modern contexts, highlights that all innovation builds upon what already exists, giving

it new meanings rather than inventing entirely novel ideas.[4]

Legal provisions typically focus more on regulating commercial behavior than solely protecting originality. Design patent laws, for instance, are designed to foster commercial monopolies and enhance business competitiveness. However, design innovation plays a crucial role in advancing commercial activities as attractive and functional designs can drive higher sales and consumer interest. On the other hand, excessive protection of business interests may hinder societal progress and technological advancement.

From a statistical standpoint, a more inclusive environment with fewer patent restrictions would encourage designers across different brands to learn from one another, leading to a broader range of design possibilities. This collaborative atmosphere ultimately allows for designs to better meet niche consumer needs. Non-mandatory enforcement mechanisms, like those in patent law, strike a delicate balance by fostering innovation while also supporting societal progress.

II. FACTS

The Apple v. Samsung case in 2012, a prominent legal dispute over design patent infringement, centers on allegations that Samsung's smartphones unlawfully replicated key aesthetic and functional elements of Apple's devices, raising critical questions about the scope of design patent protection and its role in promoting or hindering innovation within the highly competitive technology industry. Apple accused Samsung of infringing on utility and design patents. The case hinged on several key aspects, including the scope and interpretation of design patents, the methodologies for calculating damages,[5] and the broader implications for innovation and competition in the smartphone industry.[6]

One of the pivotal issues in the litigation was the extent to which design patents protect specific elements of a product's visual and functional design. Apple argued that Samsung had copied distinctive features of its iPhone, such as its rectangular shape with rounded corners, the arrangement of icons on the home screen, and its user interface design.[7] These elements were central to Apple's claim that its products had a unique functional aesthetic and design patents that Samsung unlawfully mimicked to gain a competitive advantage in the smartphone market.[8] Samsung counter-claimed that Apple failed to license 3G patent, and stifled competition, limited consumers' choice.[9]

In 2012, a jury largely sided with Apple, awarding it $1.05 billion in damages,

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[4] JULIAN PITT-RIVERS & ERNEST GELLNER, (LA PENSEE SAUVAGE) CLAUDE LEVI-STRAUSS.
[5] Precedential Patent (and Trade Dress) Case From the Federal Circuit, SCHWABE (2015), https://www.schwabe.com/publication/precedential-patent-and-trade-dress-case-from-the-federal-circuit/ (last visited Jan 4, 2025).
[6] Tim Bajarin, *Why Apple And Samsung's Device Competition Is Great For Consumers*, FORBES (2021), https://www.forbes.com/sites/timbajarin/2021/08/12/why-apple-and-samsungs-device-competition-is-great-for-consumers/ (last visited Jan 7, 2025).
[7] Precedential Patent (and Trade Dress) Case From the Federal Circuit, *supra* note 6.
[8] *Id.*
[9] Charles Arthur & George Sandeman, *Apple v Samsung: What Are the Claims and Counter-Claims?*, THE GUARDIAN, Aug. 22, 2012, https://www.theguardian.com/technology/2012/aug/22/apple-samsung (last visited Jan 7, 2025).

indicating that Samsung had willfully infringed on Apple's design and utility patents.[10] This landmark decision, however, was not the conclusion of the legal battle but rather the starting point for a protracted series of legal maneuvers. The jury's substantial award was based on an interpretation of damages that included Samsung's total profits from the sale of infringing devices. This approach, while rooted in the statutory language of 35 U.S.C. § 289,[11] sparked significant debate over its fairness and practicality. Samsung's side argued that attributing the entirety of a product's profits to a single design element oversimplified the complexities of modern consumer electronics, where multiple components and features contribute to a device's overall value.[12] Apple's side, on the other hand, maintained that strong penalties were necessary to deter blatant design infringement and to protect the investments companies make in developing innovative and distinctive products.[13]

After the initial jury decision, both Apple and Samsung emphasized the importance of focusing on customer experience and the value of their products.[14] While they are fierce competitors in the industry and legal adversaries in court, both companies share a common goal of advancing their products and achieving technological superiority. Therefore, while the necessity of clearly defining the extent of intellectual property protection is important, the cases' impacts on future product development and design innovation cannot be ignored. What Apple wanted to protect is never only the business value and patents claim, but the unique total user experience (TUX) of the iPhone and its related IOS system, as the iPhone's commercial success is driven by its TUX rather than any single feature or function outlined in an individual patent. This perspective of viewing the iPhone as a collection of highly engaging features that together create an experience greater than the sum of its parts aligns closely with advanced UX design research.[15] Apple's focus on TUX in 2012 has proven impactful today, with its commitment to excellence in every detail forming the foundation of its success.[16] As of January 2025, Apple has a market cap of $3.703 Trillion USD, which makes Apple the world's most valuable company by market cap.[17] The value of the unique user experiences, is also the commercial value for Apple as a profitable business.

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[10] Nidhi Garg, *Apple v. Samsung: Design Protection and Consumers*, 3 PACE INTELLECT. PROP. SPORTS ENTERTAIN. LAW FORUM 115 (2013).
[11] *Id.*
[12] Paul Ackerman, Jeff Dodd & Daniel Shanley, *Samsung v. Apple – Supreme Court Limits Damages in Design Patent*, XV NATL. LAW REV. (2016), https://natlawreview.com/article/samsung-v-apple-supreme-court-limits-damages-design-patent-cases (last visited Jan 4, 2025).
[13] Shutts, *Samsung v. Apple - Calculating Design Patent Infringement Damages*, https://www.shutts.com/business-and-legal-insights/samsung-v-apple-calculating-design-patent-infringement-damages (last visited Jan 4, 2025).
[14] Samsung v. Apple - Calculating Design Patent Infringement Damages, SHUTTS, https://www.shutts.com/business-and-legal-insights/samsung-v-apple-calculating-design-patent-infringement-damages (last visited Jan 4, 2025).
[15] Charles Mauro, *Apple v. Samsung: Impact and Implications for Product Design, User Interface Design (UX), Software Development and the Future of High-Technology Consumer Products*, MAURO USABILITY SCIENCE (Nov. 27, 2012), https://www.maurousabilityscience.com/blog/apple-v-samsung-implications-for-product-design-user-interface-ux-design-software-development-and-the-future-of-high-technology-consumer-products/ (last visited Jan 7, 2025).
[16] Halil Aksu, *Apple's Culture of Design and User Experience: Crafting Excellence in Every Detail*, DIGITOPIA (2024), https://digitopia.co/blog/apples-culture/ (last visited Jan 7, 2025).
[17] Apple (AAPL) - Market capitalization, https://companiesmarketcap.com/apple/marketcap/ (last visited Jan 7, 2025).

The litigation ultimately reached the Supreme Court, which in 2016 vacated the $399 million damages award that had been upheld by the Federal Circuit. The Court unanimously held that damages for design patent infringement under § 289 should not automatically be based on the infringer's total profits from the sale of the product, but rather on the "article of manufacture" to which the design was applied.[18] This decision marked a significant shift in the legal landscape for design patents, leaving lower courts to grapple with the complex task of determining the appropriate methodology for identifying the relevant article of manufacture and calculating damages accordingly. The legal battles between the two tech giants spanned various countries and courts, reflecting the global scale of the dispute.[19] Apple won litigations in the United States while Despite Apple's initial victory, the U.S. Patent and Trademark Office later tentatively invalidated some of Apple's patents on key functionalities, casting doubt on the permanence of the jury's decision.[20] Furthermore, the complex nature of the patents involved and the rapid evolution of technology led to ongoing debates about the effectiveness and fairness of the patent system, especially in cases where the innovation is highly technical and fast-moving.

This high-profile dispute eventually led to a settlement between Apple and Samsung in 2018, with the terms undisclosed, signaling an end to a significant chapter in the saga of tech industry patent litigation. [21] One of the outcomes of such litigation was that companies, including Samsung, became more cautious in their design processes to avoid future legal challenges.

III. PRINCIPLE

Previous cases highlighted the significance in trade dresses' functionality, as it defines if the trade dress can bring commercial profits and therefore should be protected or not.[22] Through the lens of human-centered design, all products should prioritize meeting the users' needs and experiences.[23] However, this must be balanced against the financial realities and sustainability of businesses. The question arises: how can one equitably value users' needs and broader societal technological advancements without reducing them to mere monetary trade-offs? Strict enforcement of intellectual property protections may risk prioritizing business interests over user needs and therefore hurt the collaborative spirit of innovation. To foster both innovation and fairness, intellectual property frameworks must allow room for nuanced legal interpretation, enabling a balance between protecting business interests and advancing societal and user-focused technological growth. More importantly, a humane legal system with flexibility can better support human rights by addressing the complexities of diverse societal needs. In this context, Transsion Holdings can be a great example.

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[18] Samsung Electronics Co. v. Apple Inc., 580 U.S. ___ (2016), JUSTIA LAW (2016), https://supreme.justia.com/cases/federal/us/580/15-777/ (last visited Jan 7, 2025).
[19] Nina Zhang, *Lesson Learned: Samsung vs. Apple (2011) Patent Lawsuit Case Study*, FLATFEE (2023), https://flatfeecorp.com/articles/Samsung-vs-Apple-2011 (last visited Jan 7, 2025).
[20] Garg, *supra* note 11.
[21] *Id.*
[22] Precedential Patent (and Trade Dress) Case From the Federal Circuit, *supra* note 6.
[23] Introduction to human-centered design, DIGITAL.GOV (2023), https://digital.gov/guides/hcd/introduction/principles/ (last visited Feb 2, 2025).

IV. DISCUSSION

Huaqiang Electronics World, located in Huaqiangbei, Shenzhen, is often referred to as "China's Silicon Valley" and the "Silicon Valley of Hardware,"[24] reflecting its pivotal role in the global electronics and hardware ecosystem. It is renowned as one of the world's largest electronics markets, offering a vast array of electronic components, gadgets, and hardware. This bustling marketplace is a hub for technology enthusiasts, entrepreneurs, and manufacturers seeking to source electronics or find inspiration for new projects. Huaqiangbei is also famous for its *shanzhai* (山寨) culture, where components of popular electronic products and brands are open-sourced, produced and sold. Printed circuit boards, widely known as public board (公版),[25] emerged as the leading type of open-source product. Similar to the foundational principles of the maker movement, these boards function as adaptable computational platforms, allowing for virtually endless customization. In addition to supplying key components, numerous smaller *shanzhai* factories expanded their role by providing Original Equipment Manufacturing (OEM) and Original Design Manufacturing (ODM) services, broadening their impact within the ecosystem.[26] OEM refers to companies that manufacture products or components designed by another company. The OEM produces these items under the buyer's brand, often to the buyer's specifications. ODM involves companies that design and manufacture products which are then sold under another company's brand. In this case, the manufacturer provides both the design and production, offering a ready-made solution for branding. Huaqiangbei embraced the ODM model, enabling factories to leverage the cost efficiencies of large-scale production while catering to numerous smaller clients. These products, unbound by exclusive licensing to any single company, came to be referred to as "white-label" goods.[27] While some argue that Huaqiangbei undermines the integrity of innovation, it also offers valuable opportunities for start-ups, providing society with an alternative perspective on technological progress and accessibility.

Transsion Holdings, a Shenzhen-based company, is a prime example of a business that emerged from Huaqiangbei's copycat culture. Initially following the market's trend of imitating existing products, Transsion began its journey by producing low-cost mobile phones that resembled those of established brands. However, instead of merely replicating designs, the company identified a critical gap in the market: traditional phone cameras often failed to capture individuals with darker skin tones accurately, as their biased algorithms treated darker skin as part of the background. Recognizing this overlooked need, Transsion developed phone cameras optimized to address this bias, ultimately winning over a substantial share of the African market. Dubbed the "King of Africa" and the largest smartphone supplier to the African market by the end of 2017, Transsion captured 48% of the African smartphone market by shipping 8.6 million devices in the third quarter of 2023. This

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[24] Matt Reynolds, *Inside Shenzhen: The Silicon Valley of Hardware*, WIRED (2016), https://www.wired.com/story/shenzhen-silicon-valley-of-hardware-wired-documentary/ (last visited Jan 5, 2025).
[25] What is a public board PCB_Baidu knows, BAIDU (Apr. 20, 2023), https://zhidao.baidu.com/question/559661734719371484.html?utm_source\ (last visited Jan 7, 2025).
[26] Taylor Coplen, *DECENTRALIZED HARDWARE PRODUCTION: MAKERSPACES, SHANZHAI, AND THE FUTURE OF SHENZHEN'S TECHNOLOGY INDUSTRIES*, UNIV. HONG KONG (2019).
[27] *Id.*

performance far surpassed second-place Samsung, which held 26% of the market.[28]

This trajectory underscores a broader narrative about innovation, intellectual property, and human rights. While Transsion's beginnings in Huaqiangbei reflect the ethical ambiguities of intellectual property infringement, the company's eventual success demonstrates how addressing genuine user needs can foster inclusivity and promote human dignity. By creating technology that respects and represents all users, Transsion's approach highlights the importance of designing for equity. A more humane legal framework that balances intellectual property enforcement with the promotion of inclusive innovation becomes critical. Such a system can empower businesses to move beyond imitation and address pressing societal issues, ultimately aligning technology with the broader principles of human rights and fairness.

Besides Transsion, the humane wellness spirit and the relationship between design patents and innovation is still worthy of attention in recent years. Elon Musk leads the emerging trend of balancing intellectual property and innovation. His move to open-source Tesla's electric vehicles patents aimed to boost the electric vehicle industry's growth and innovation. This strategy is expected to foster a broader adoption of electric vehicles, reducing global carbon emissions and leading to a more sustainable future.

More recently, in November 2024, the live streaming video depicts a rocket as big as a skyscraper roaring into space, among the deafening cheers, Elon Musk's SpaceX Starship successfully completed its sixth flight test.[29] While people were immersed in the romance of another milestone of a great leap of humanity's technological level, I was reminded how SpaceX benefited from the Soviet Union's design, which was apparently not protected by patents, and proved to be an example showing how open-source can lead great societal and technological progression. The SpaceX's Starship and the Soviet Union's N1 rocket share a notable approach in terms of design and development philosophy, particularly in the use of a large number of smaller engines and an iterative design and testing process. The N1 rocket, developed by the Soviet Union, utilized a multitude of engines in its first stage, a design choice echoed by SpaceX's Starship with its Super Heavy booster.[30] This approach, aside from operational and cost benefits, allows for increased reliability through redundancy and easier manufacturing and testing processes. SpaceX's Starship incorporates innovative design choices such as construction primarily from stainless steel and the utilization of Raptor engines that burn liquid methane and liquid oxygen. Its design supports SpaceX's ambition for Mars colonization and positions Starship as a versatile vehicle for a wide range of space missions.[31]

The fundamental purpose of intellectual property law is to incentivize innovation, ensuring that creative and technological advancements continue to enrich

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[28] Admin Doug, *Transsion Climbs Global Smartphone Leader Board with Its Move out of Africa - Bamboo Works - China Stock Insights for Global Investors*, BAMBOO WORKS (Jan. 26, 2024), https://thebambooworks.com/transsion-climbs-global-smartphone-leader-board-with-its-move-out-of-africa/ (last visited Jan 5, 2025).

[29] STARSHIP'S SIXTH FLIGHT TEST, (2024), https://x.com/i/broadcasts/1RDGlydZAeOJL (last visited Jan 5, 2025).

[30] Trevor Sesnic, *Starship vs. N1*, EVERYDAY ASTRONAUT (2023), https://everydayastronaut.com/starship-vs-n1/ (last visited Jan 5, 2025).

[31] *Id.*

society. However, when legal frameworks prioritize restrictive exclusivity over dynamic innovation, they risk deviating from this foundational objective. Intellectual property must function as a mechanism for stimulating knowledge diffusion and technological progress, not as an instrument for reinforcing economic monopolies and erecting barriers to future development.

The SpaceX case, where publicly available Soviet-era rocketry designs facilitated breakthrough advancements, highlights a core dilemma in contemporary intellectual property law: to what extent should past innovations be enclosed within proprietary frameworks, rather than serving as stepping stones for further progress? While IP protections are essential to fostering an initial investment in research and development, their overextension can lead to an anti-innovative paradox, where legal constraints on prior knowledge suppress the very progress that the system was designed to encourage.

This issue extends beyond extreme, existential scenarios like interplanetary migration or global crises. Even under ordinary economic conditions, an overly rigid IP regime risks entrenching a form of modern feudalism—where a small group of corporate entities wield disproportionate control over knowledge, technology, and economic opportunity. When access to fundamental advancements is governed by legalistic gatekeeping rather than meritocratic innovation, industries stagnate, and entire societies become beholden to a new aristocracy of intellectual property holders.

The analogy between modern intellectual property regimes and historical feudal structures is not merely rhetorical—it is reflected in the growing monopolization of knowledge, technological infrastructures, and digital ecosystems. Just as medieval feudal lords controlled access to land, today's technology giants control access to essential digital and scientific resources, creating systemic inequalities in innovation. Patent trolling and strategic litigation allow corporations to accumulate patents not to advance technology, but to block competitors and extract rents through legal battles, an abuse that mirrors feudal toll systems restricting economic activity. Prolonged IP lock-in and evergreening enable companies to extend the lifespan of patents through incremental modifications, effectively privatizing foundational knowledge for generations rather than allowing it to contribute to technological evolution. Universities and research institutions, originally designed to disseminate knowledge freely, are increasingly commercialized, limiting access to research unless one can afford exorbitant licensing fees. Without intervention, IP law risks transforming into a global system of intellectual serfdom—where access to knowledge is stratified between those who control patents and licensing regimes and those who must operate within their constraints.

To realign intellectual property law with its original function as a catalyst for progress, legal systems must undergo structural recalibration. The goal should not be to dismantle intellectual property protections entirely, but to ensure they operate within a framework that prioritizes ongoing innovation over static monopoly control. Time-limited patent protections should expire at a rate proportionate to the field's innovation cycle, preventing outdated patents from hindering industry progress. Compulsory licensing mechanisms should allow for public-interest-driven access, particularly in areas critical to economic and technological development. Certain fields—such as space exploration, artificial intelligence, and biotechnologies with existential implications—should be partially exempt from restrictive intellectual property

enclosures, with models that incentivize shared progress while still rewarding original contributors. Anti-trust regulations should prohibit the strategic acquisition of patents for monopolistic control rather than genuine technological development, while regulatory mechanisms must prevent knowledge hoarding, where firms deliberately restrict access to foundational research through proprietary restrictions.

The ethical legitimacy of intellectual property law rests on its ability to balance exclusivity with accessibility, protecting innovation while ensuring it serves the broader advancement of society. The alternative—a legal landscape where corporations and elite entities exert indefinite control over fundamental technologies—would constitute a de facto digital feudalism, where knowledge ceases to be a vehicle for collective progress and instead becomes a privatized commodity subject to corporate sovereignty.

Thus, legal scholars, policymakers, and industry leaders must reaffirm the principle that intellectual property exists to facilitate, not hinder, human progress. The objective is not to dismantle the incentives for innovation but to prevent legal systems from becoming tools of entrenched economic and technological hierarchy. If the goal of knowledge is to advance civilization, then its legal frameworks must be structured not to enclose progress, but to ensure its continuous, collective evolution.

V. FUTURE DIRECTIONS FOR STUDY AND RESEARCH

One critical area for future research is the development of inclusive design standards and legal frameworks that prioritize addressing the needs of underserved or marginalized populations. Cases like Transsion's innovation in addressing algorithmic bias demonstrate the potential for inclusive designs to bridge the gaps. Exploring how intellectual property laws can encourage such efforts while safeguarding creators' rights will be vital for ensuring equitable technological progress.

Another direction involves assessing the impact of flexible intellectual property enforcement. Comparative studies across industries and regions could provide empirical insights into how differing approaches influence economic growth, innovation, and societal well-being. Such research would help policymakers understand the broader implications of intellectual property law on market dynamics and human rights.

The ethical and technological implications of biased algorithms also warrant deeper investigation. Algorithms embedded in everyday technologies, such as cameras or facial recognition software, often reflect and amplify societal biases. Research should explore how intellectual property laws can incentivize the development of unbiased and inclusive technologies, ensuring that advancements do not perpetuate discrimination or exclusion.

Additionally, it is crucial to study the balance between global and local needs in intellectual property policies. While global intellectual property protection frameworks often favor established multinational corporations, they can inadvertently hinder innovation in emerging markets. Examining how policies can be tailored to address local innovation needs—without undermining global protections—will provide insights into fostering equitable growth.

Interdisciplinary policy models that integrate human-centered design principles with legal scholarship represent another promising avenue. By combining insights from design, law, and technology, researchers can propose intellectual property frameworks that promote innovation while aligning with broader human rights objectives. These models could serve as a foundation for creating legal systems that are both adaptive and equitable. Through these research directions, scholars and practitioners can contribute to building a more balanced and equitable intellectual property regime—one that protects innovation while addressing the human rights implications of technological progress.

CONCLUSION

In conclusion, it is essential to emphasize that Legal frameworks should balance protecting intellectual property with fostering inclusive innovation, ensuring that laws do not favor monopolies at the expense of progress. Blindly adhering to a rigid standard of originality—one that disregards external sources or influences—can often resemble an ostrich burying its head in the sand, failing to acknowledge the existence of earlier, similar works. This insular approach not only risks mischaracterizing seemingly innovative ideas but also creates a self-imposed stagnation that impedes progress. Overly rigid intellectual property enforcement risks stagnation: instead, innovation thrives when legal frameworks encourage adaptation and cross-disciplinary exchange. A balanced framework should therefore promote originality while fostering an environment that values the assimilation of new viewpoints, ensuring that innovation thrives in a collaborative and inclusive ecosystem.