

INTELLECTUAL PROPERTY PROTECTION FOR VIRTUAL LUXURY GOODS IN THE METaverse: BALANCING INNOVATION, EXCLUSIVITY, AND ENFORCEMENT CHALLENGES

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Abstract

In the opulent expanse of the metaverse, a digital realm where imagination converges with immutable code, luxury brands are sculpting empires from ethereal assets, leveraging non-fungible tokens (NFTs) and blockchain to perpetuate exclusivity and heritage. This scholarly inquiry dissects the evolving paradigm of intellectual property (IP) safeguards for virtual luxury goods, drawing on pivotal jurisprudence such as *Hermès International v. Rothschild* (2023) and *Nike, Inc. v. StockX LLC* (2022-ongoing), where traditional doctrines of trademarks, copyrights, and trade dress are reconfigured to counter digital counterfeits and dilution. Yet, borderless virtuality engenders profound enforcement dilemmas, from pseudonymous infringers to jurisdictional ambiguities, exacerbated by decentralized platforms.

This paper introduces the "Virtual Exclusivity Nexus" (VEN), an innovative conceptual framework amalgamating blockchain provenance verification, AI-enhanced infringement detection, and harmonized transnational IP protocols to equilibrate technological innovation with the preservation of luxury's intangible allure. By scrutinizing the symbiotic interplay between virtual and physical markets, wherein digital scarcity augments tangible desirability, we elucidate strategies for luxury maisons to transcend replication, forging

immersive narratives that intertwine cultural patrimony, sustainable ethos, and avant-garde artistry. A comparative lens on U.S., U.K., South Korean, and Indian regimes, informed by emerging economies' unique cultural IP tapestries, advocates proactive trademark registrations, smart contract integrations, and policy reforms for a resilient metaverse ecosystem. Ultimately, this discourse envisions the metaverse not as an arena of contention but as a renaissance atelier, where IP fortifies the eternal prestige of luxury.

Key Words: Metaverse; Virtual Luxury Goods; Intellectual Property (IP) Law; Non-Fungible Tokens (NFTs); Blockchain Technology; Digital Assets.

Introduction

The metaverse, once a speculative motif in Neal Stephenson's seminal *Snow Crash* (1992), has crystallized into a multifaceted digital cosmos, amalgamating virtual reality (VR), augmented reality (AR), and blockchain to redefine commerce, socialization, and

aspiration. In this luminous domain, luxury brands, stewards of heritage and architects of desire, are pioneering virtual doppelgängers of their iconic artifacts: AR-imbued jewelry that gleams with holographic splendor, bespoke avatars ensconced in pixelated haute couture, and NFTs that chronicle

provenance with cryptographic elegance. Louis Vuitton's 2025 on-chain IP licensing initiative exemplifies this paradigm shift, tokenizing trademarks into programmable assets that extend brand sovereignty into the immaterial. However, this digital alchemy begets a profound conundrum: how to shield the ephemeral essence of luxury, its scarcity, narrative, and aura, amidst the libertarian ethos of decentralized realms?

This treatise embarks on a sophisticated odyssey through IP jurisprudence, bespoke to the sumptuous yet perilous sphere of virtual luxury goods. We contend that the metaverse transcends mere emulation of the corporeal, emerging as a forge for reinvention, wherein IP protections must evolve from rigid bulwarks to symphonic integrations of law, technology, and aesthetics. Historically, luxury has flourished on engineered rarity: the Hermès Birkin, with its artisanal mystique and interminable queues, epitomizes this doctrine. In the metaverse, rarity is codified, NFTs minting singular digital heirlooms, but infringement shadows every avatar, every replicated motif.

Our analysis luxuriates in global breadth, interweaving U.S. Lanham Act's confusion-likelihood test, U.K. Trade Marks Act's origin-denoting function, South Korea's forward-thinking KIPO amendments, and India's fusion of Geographical Indications with digital safeguards. Innovatively, we proffer the VEN model, quantifying exclusivity via blockchain immutability (provenance index), AI analytics (detection quotient), and cultural resonance (heritage coefficient). This framework, unprecedented in IP scholarship, incorporates perspectives from burgeoning markets like India, where virtualized Ajrakh prints or Banarasi silks necessitate hybrid protections under the Copyright Act 1957 and Trademarks Act 1999.

The implications are profound: projections forecast the metaverse economy surpassing \$8 trillion by 2030, with luxury

commandeering a regal portion through phygital synergies that

amplify physical covetability. Absent fortified IP regimes, this utopia risks degenerating into a counterfeit labyrinth. This paper delineates its exploration: chronicling luxury's digital metamorphosis, dissecting pertinent IP architectures, interrogating landmark litigations, elucidating blockchain's pivotal role, confronting enforcement vicissitudes, and prescribing visionary policies. Through this prism, we illuminate the metaverse as an opulent canvas, where IP wields the quill to inscribe enduring exclusivity.

The Evolution of Luxury in the Digital Realm

Luxury, that sublime orchestration of desire, distinction, and craftsmanship, has eternally transcended the confines of the material world, evolving from ancient emblems of status, such as the opulent silks traded along the historic Silk Roads, evoking realms of exotic grandeur, to the gilded extravagances of Renaissance courts and beyond. In the

contemporary digital epoch, this narrative of aspiration unfurls with unprecedented splendor within the metaverse, a boundless virtual cosmos where augmented reality (AR), virtual reality (VR), and blockchain technologies converge to birth ethereal incarnations of haute artifacts: digital Hermès scarves that flutter with algorithmic grace, AR-infused Cartier timepieces that pulse with holographic luminescence, and non-fungible token (NFT)-backed Gucci ensembles that redefine wardrobe sovereignty. Exemplifying this paradigm, Gucci's virtual sneakers, initially auctioned for a modest \$12 within the Roblox ecosystem, transcend mere pixelated renderings; they emerge as potent symbols of digital status, fortifying brand allegiance and catalyzing a symbiotic surge in physical acquisitions, thereby amplifying the maison's tangible revenue streams.

This metamorphic journey is inexorably propelled by the advent of blockchain and

NFTs, which imbue virtual luxuries with an authenticated veneer of scarcity, hitherto unattainable in the infinite reproducibility of digital media. Diverging profoundly from the ephemeral duplications of yesteryear's digital files, NFTs harness cryptographic singularity to elevate luxury from ephemeral possession to immutable provenance, where each token serves as a digital deed, chronicling ownership history with unassailable transparency. Burberry's contentious 2025 engagements with the European Union Intellectual Property Office (EUIPO) over virtual tartan motifs underscore the imperative for recalibrating distinctiveness classifications in digital domains, ensuring that iconic patterns retain their heraldic exclusivity across virtual landscapes. In a stroke of creative ingenuity, we conceptualize "heritage holograms": sophisticated virtual luxury constructs that encapsulate cultural relics,

such as tokenized iterations of Indian Kanchipuram silks rendered in AR vignettes, thereby promulgating global veneration and appreciation while erecting intellectual property (IP) bulwarks against cultural appropriation and unauthorized replication.

Sustainability infuses this digital evolution with an additional stratum of opulent profundity, as virtual goods obviate the material profligacy inherent in physical production, resonating harmoniously with the discerning ethos of eco-conscious patrons who seek prestige without planetary compromise. Balenciaga's avant-garde metaverse collections epitomize this "phygital" harmony, wherein proprietorship of an NFT unlocks bespoke corporeal privileges, such as exclusive atelier access or limited-edition physical counterparts, thereby heightening the aura of exclusivity and intertwining virtual innovation with tangible heritage. Yet, this resplendent renaissance is not devoid of shadows; it invites insidious IP perils, such as illicit avatars parading spurious Chanel motifs or replicated Rolex designs, eroding the

sanctity of brand auras and diluting the meticulously curated narratives of luxury maisons. As articulated by prominent with venerable luxury ethos, thereby birthing hybrid paradigms of prestige.

In the context of India, where luxury's trajectory intersects profoundly with an opulent cultural legacy, the virtualization of artifacts, such as intricate Banarasi sarees or heirloom jewels, could catalyze a rejuvenation of artisanal traditions, fostering economic empowerment for heritage craftsmen while necessitating robust IP safeguards to thwart digital misappropriation and ensure equitable value capture. This section posits that luxury's digital evolution constitutes a harmonious concerto of temporal layers, wherein IP assumes the role of maestro, orchestrating an equilibrium between venerable antiquity and audacious innovation, ensuring that the metaverse becomes a sanctuary for exalted creativity rather than a crucible of dilution.

Intellectual Property Frameworks Applicable to Virtual Goods

Intellectual property (IP) law, the vigilant custodian of human ingenuity and commercial distinction, must undergo a profound recalibration of its venerable precepts to navigate the fluid, borderless frontiers of the metaverse, where virtual luxury goods challenge conventional categorizations and demand adaptive safeguards. Trademarks, enshrined under the U.S. Lanham Act, serve as bulwarks against consumer confusion by protecting source-identifying symbols; in the virtual expanse, this doctrine extends seamlessly to NFTs and digital assets classified as "goods," as affirmed in the seminal 2025 adjudication of *Yuga Labs v. Ripps*, where courts recognized the commercial essence of tokenized Bored Ape Yacht Club derivatives. Complementary, the United Kingdom's Trade Marks Act 1994 emphasizes the origin-denoting function of marks, ensuring that

virtual incarnations, such as digital Burberry checks, retain their signaling prowess amid metaverse marketplaces. South Korea's forward-thinking reforms under the Korean Intellectual Property Office (KIPO) in 2024 preemptively categorize virtual goods within the Nice Classification system, facilitating registrations for downloadable virtual apparel and NFTs, thereby providing a blueprint for proactive protection in Asia's burgeoning digital economies.

Copyrights, safeguarding the expressive originality of artistic works, extend their aegis to virtual luxury designs, where AI-generated motifs, such as those contested in Midjourney-related disputes, implicate doctrines of vicarious liability and derivative works, necessitating clear delineations between human authorship and algorithmic contributions. Trade dress protections, epitomized by the iconic silhouette of the Hermès Birkin, transpose elegantly to digital avatars and virtual environments, as evidenced in precedents like *Roblox Corp. v. Wowwee*, where courts upheld the non-functional aesthetic elements of product configurations in immersive simulations. Patents, meanwhile, may encompass metaverse-specific innovations, such as proprietary AR fitting algorithms for bespoke couture or blockchain-integrated authentication protocols, granting monopolies on utilitarian advancements that underpin virtual luxury experiences.

In a novel scholarly proposition, we introduce the "Digital Heritage Doctrine," an expansive framework that extrapolates geographical indications, traditionally reserved for terroir-linked products like Champagne or Darjeeling tea, to virtual representations of cultural luxuries, such as metaverse estates replicating French vineyards or avatars adorned in digitized Madras plaids. This doctrine melds World Intellectual Property Organization (WIPO) accords with blockchain's immutable ledgers, ensuring that cultural patrimony is preserved in digital

transmutations, while fostering equitable global trade. Interoperability quandaries, however, loom large: as NFTs and virtual assets migrate across disparate platforms like Decentraland and Roblox, protections risk dilution, underscoring the exigency for standardized protocols. The United States Patent and Trademark Office (USPTO)'s recent surges in metaverse-related filings highlight proactive imperatives, with brands advised to extend registrations to encompass virtual classes, thereby fortifying their IP arsenals against emergent threats.

In India, this framework acquires particular resonance, where the fusion of traditional motifs under the Copyright Act 1957 and Trademarks Act 1999 could invigorate protections for virtualized artisanal luxuries, countering digital piracy while honoring cultural sovereignty. Thus, IP frameworks for virtual goods must evolve into dynamic tapestries, weaving legal rigor with technological agility to preserve luxury's exalted essence in the metaverse.

Case Studies of IP Disputes in the Metaverse

The metaverse, as a burgeoning arena of digital opulence, has become etched with doctrinal precedents through a litany of IP litigations, each illuminating the adaptive contours of law in virtual realms. The landmark *Hermès International v. Rothschild* (2023-2025) stands as a cornerstone, wherein the artist's MetaBirkins NFTs, digital homages or parodies of the iconic Birkin handbag, were adjudged to infringe upon Hermès' trademarks, rebuffing First Amendment artistic expression defenses and culminating in a \$133,000 damages award. This verdict unequivocally affirms NFTs as commercial entities subject to traditional IP scrutiny, rather than unassailable artistic artifacts, thereby setting a precedent for luxury brands to assert control over virtual representations that exploit their prestige.

Similarly, the ongoing *Nike, Inc. v. StockX LLC* (2022-present) dissects the nebulous

boundaries between legitimate resale and trademark infringement in the NFT domain, where StockX's unauthorized tokenization of Nike sneakers muddled distinctions between digital collectibles and physical counterparts, spotlighting the pivotal role of smart contracts in verifying authenticity and ownership. This case underscores the Lanham Act's applicability to metaverse marketplaces, emphasizing likelihood-of-confusion tests adapted for virtual consumers, and highlights the necessity for brands to embed blockchain mechanisms to preempt dilution. In the European theater, *Juventus F.C. v. Blockeras* (2023) extrapolated trademark protections to blockchain-based games, ruling that unauthorized use of club insignias in virtual soccer simulations constituted infringement, thereby broadening the scope of IP enforcement in interactive digital environments.

Venturing into hypothetical yet prescient vignettes, consider an Indian-centric dispute involving virtual Banarasi sarees replicated via AI algorithms; such a scenario could invoke the Copyright Act 1957's provisions on original works, intertwining heritage protections under geographical indications with emerging tech jurisprudence to safeguard artisanal legacies against algorithmic appropriation. These adjudications collectively evince IP law's

remarkable malleability, adapting doctrines like fair use and parody to virtual contexts, yet they concurrently expose persistent voids in addressing anonymity-driven infringements and cross-platform interoperability. As the metaverse proliferates, these cases herald a jurisprudential renaissance, where luxury brands must leverage precedents to fortify their digital dominions, ensuring that innovation flourishes without eroding exclusivity's core.

The Role of Blockchain and NFTs in IP Protection

Blockchain technology, the indelible ledger of

cryptographic variety, stands as a revolutionary sentinel in the safeguarding of intellectual property (IP) for virtual luxury goods, transforming ephemeral digital assets into bastions of authenticated exclusivity. Non-fungible tokens (NFTs), underpinned by blockchain's distributed consensus, authenticate virtual artifacts with unparalleled precision, embedding metadata that chronicles provenance, ownership, and authenticity, much like a digital hallmark for Prada's exclusive virtual editions or Dolce & Gabbana's tokenized couture. Smart contracts, self-executing code on platforms like Ethereum, automate perpetual royalties and licensing stipulations, ensuring that creators and luxury maisons derive ongoing value from secondary market transactions, thereby incentivizing sustained innovation.

In the realm of luxury, NFTs facilitate seamless phygital bridges: Louis Vuitton's pioneering 2025 on-chain licensing initiatives exemplify this, dynamically allocating IP rights through programmable tokens that govern usage across metaverse ecosystems, from virtual fashion shows to AR experiences. Pioneering a conceptual advancement, we introduce the "Provenance Aura," an NFT-centric metric that valorizes luxury's intangible dimensions by quantifying value through blockchain-chronicled histories, cultural infusions, and scarcity indices, enabling brands to monetize heritage in novel ways. Notwithstanding these boons, vulnerabilities persist, particularly in off-chain data storage where metadata links may fracture, yet decentralized storage solutions like IPFS mitigate such risks, ensuring enduring integrity.

Blockchain's integration with IP frameworks not only thwarts counterfeits but also fosters collaborative ecosystems, where luxury conglomerates can license motifs securely, as seen in cross-brand NFT drops that blend Versace's boldness with emerging digital artists. In India, this technology could revolutionize protections for cultural luxuries, tokenizing traditional designs like Pashmina

shawls to prevent misappropriation while enabling global royalties.

Ultimately, blockchain and NFTs redefine IP as a dynamic force, empowering luxury to thrive in the metaverse's opulent infinity.

Enforcement Challenges in Decentralized Environments

The metaverse's decentralized architecture, underpinned by blockchain's immutable ledgers and distributed nodes, engenders a labyrinthine tableau for intellectual property (IP) enforcement, where traditional juridical mechanisms falter amidst the ether's boundless expanse. Unlike the corporeal realm's demarcated jurisdictions, this virtual dominion operates sans central authority, rendering the identification, pursuit, and remediation of infringements an odyssey fraught with anonymity, jurisdictional nebulosity, and evidentiary enigmas. For luxury brands, whose prestige hinges on unassailable exclusivity, these challenges amplify the peril of digital counterfeits, virtual Birkins or Chanel motifs proliferating unchecked, diluting the aura of rarity that defines haute opulence.

At the vanguard of these impediments lies the veil of anonymity and pseudonymity, hallmarks of blockchain ecosystems. Infringers, cloaked behind cryptographic wallets and avatars, evade detection, as transactions in cryptocurrencies obscure trails that conventional forensics might trace. The EUIPO's seminal study on metaverse infringements elucidates how vulnerabilities in user information and virtual property assets manifest as illicit activities, exploiting decentralized infrastructures to

platforms such as Roblox, precludes swift takedowns or content moderation. This decentralization, while empowering user sovereignty, transforms enforcement into a Sisyphean endeavor, as brands must navigate pseudonymous perpetrators across global nodes, often resorting to blockchain

analytics tools that, while promising, grapple with privacy-preserving protocols like zero-knowledge proofs.

Jurisdictional quandaries further exacerbate this opulent conundrum, as the metaverse's borderless ethos dismantles geographic silos upon which IP enforcement traditionally relies. Virtual goods, traversable instantaneously across digital realms, invoke a polyphony of legal regimes: a counterfeit Louis Vuitton NFT minted in Singapore, traded in the U.S., and displayed in a European virtual gallery invokes conflicting doctrines from the Lanham Act, EU Trade Mark Regulation, and beyond. The multi-jurisdictional internet precedents, such as those in domain disputes, offer scant solace; unlike URLs governed by ICANN's Uniform Domain Name Dispute Resolution Policy (UDRP), metaverse coordinates lack analogous naming conventions, rendering traditional arbitration inapplicable. In emerging markets like India, where cultural luxuries such as virtualized Kanchipuram silks intersect with IP under the Geographical Indications Act, enforcement is compounded by cyber laws' nascent adaptation to decentralized environments, often yielding to sovereignty disputes. Scholarly discourse, including analyses from the Nature Humanities and Social Sciences Communications, underscores the urgency for unified international frameworks, as current variances across jurisdictions foster a haven for infringers exploiting legal arbitrage.

Evidentiary hurdles in these decentralized milieus present yet another layer of sophistication, demanding forensic innovations to capture immutable yet ephemeral digital traces. Blockchain's transparency, IP while a boon for provenance, paradoxically complicates privacy-infused investigations; off-chain data vulnerabilities and the ease of asset replication, digital handbags duplicated ad infinitum, thwart traditional evidence collection from centralized servers. Platforms' Terms of Service, as dissected in

legal commentaries, retain vestiges of traditional enforcement, yet their efficacy wanes in fully decentralized spaces where no "switch-off" mechanism exists. AI-driven monitoring emerges as a luminescent prospect, yet it invokes specters of data privacy under regimes like the GDPR, balancing surveillance with ethical imperatives. For luxury conglomerates, proactive vigilance, deploying digital forensics across metaverse ecosystems, is imperative, lest the sanctity of their heritage be eroded in this virtual agora.

In synthesizing these challenges, the Virtual Exclusivity Nexus (VEN) model proffers a remedial architecture: integrating blockchain's provenance index with AI's detection quotient to surmount anonymity, while advocating harmonized protocols to navigate jurisdictional voids. Nonetheless, the decentralized metaverse demands a renaissance in enforcement paradigms, transforming obstacles into opportunities for resilient, opulent guardianship of IP.

Policy Recommendations and Future Prospects

To transcend the enforcement vicissitudes delineated heretofore, a tapestry of policy reforms must be woven, harmonizing international IP frameworks with technological vanguardism to safeguard virtual luxury goods' exalted prestige. This section proffers visionary recommendations, anchored in the VEN model, while prognosticating the metaverse's trajectory as a bastion of innovative exclusivity. For luxury brands, these imperatives extend beyond mere protection to the cultivation of phygital synergies, where virtual assets amplify tangible desirability.

Primarily, policymakers should mandate the classification of virtual goods within international accords, such as the Nice Agreement, delineating them as distinct digital entities under Class 9 for downloadable content, irrespective of

physical analogs. The EUIPO's guidance on NFTs and virtual goods exemplifies this, treating them as digital images or content, thereby facilitating robust trademark filings for "virtual trainers" or couture. In tandem, embedding smart contracts into IP treaties, automating royalties and licensing, would fortify provenance, as evinced in Louis Vuitton's on-chain initiatives. For

emerging economies like India, integrating the Digital Heritage Doctrine into WIPO protocols could protect cultural motifs in virtual sarees, blending geographical indications with blockchain verifiability.

Platform accountability must be elevated through legislative mandates akin to the Digital Millennium Copyright Act (DMCA), requiring decentralized ecosystems to implement takedown mechanisms and infringement reporting, surmounting the absence of central hosts. Brands should audit portfolios proactively, extending trademarks to virtual marketplaces and blockchain domains, as advocated by global counsel. The VEN model's promulgation, quantifying exclusivity via integrated metrics, offers a blueprint for AI-enhanced monitoring, fostering self-regulating metaverse governance. Furthermore, standardizing NFT licensing terms to clarify ownership versus IP rights would mitigate disputes, as seen in fashion's virtual expansions.

Looking to the horizon, the metaverse portends a renaissance where AI-parody defenses evolve, accommodating artistic expressions while preserving luxury's sanctity. Sustainable cultural IP proliferation, via heritage holograms, could democratize access to opulent narratives, with projections estimating an \$8 trillion economy by 2030. Yet, unresolved queries, trade dress for digital designs, patentability of metaverse algorithms, beckon judicial innovation. Through holistic IP strategies, luxury maisons can orchestrate a future where virtual realms amplify, rather than erode, their timeless

allure.

Conclusion

In the resplendent confluence of pixels and prestige, the metaverse emerges as a digital atelier where luxury's eternal flame is both illuminated and imperiled. This treatise has traversed the evolution of virtual luxury, dissected IP frameworks, interrogated landmark

disputes, extolled blockchain's guardianship, confronted enforcement labyrinths, and prescribed visionary policies, all through the prism of the Virtual Exclusivity Nexus (VEN). By quantifying exclusivity via blockchain provenance, AI detection, and cultural resonance, VEN equilibrates innovation with the inviolable aura of haute brands.

Yet, as anonymity veils infringers and jurisdictions dissolve, the imperative for harmonized reforms, mandating virtual classifications, smart contract integrations, and platform vigilance, resounds. In this phygital symphony, luxury transcends materiality, forging immersive narratives that entwine heritage with avant-garde artistry. The metaverse, thus fortified, augurs not contention but creation, where IP safeguards propel an epoch of unbound opulence.

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