Journal of Intellectual Property Rights
Vol 31, November 2026, pp. 953-963
DOI: 10.56042/jipr.v31i6.20885

Concerns of Copyright Protection in Metaverse: Study of the Jurisdictions of the United States of America and India

Akansha Yadav[†] and Satish Kumar

Jindal Global Law School, O.P. Jindal Global University, Haryana – 131 001, India

Received: 24th June 2025; Revised: 2nd December 2025

The paper examines how established copyright doctrinesoriginally designed to operate in the physical world operate within immersive virtual environments,also known as the metaverse, and evaluates whether current law requires reform to remain effective in this novel context. The central research question in this paper is 'how do traditional rules of copyright law play out in the metaverse, and is there a need to change those rules to achieve in virtual worlds what they accomplish in the physical world?' A subsidiary inquiry considers whether non-fungible tokens (NFTs) offer a viable mechanism to bridge gaps in digital ownership and enforcement.

The analysis begins by tracing copyright's historical adaptation to technology, spotlighting the emergence of fair use, the first-sale doctrine, and human-centered authorship. It then explores metaverse-specific challenges under four benchmarks. First, authorship must be a natural person, yet AI-generated and platform-assisted creations strain this requirement, leaving many virtual works not fit for copyright protection. Second, the originality threshold, which is the "modicum of creativity,"is tested by heavily derivative or auto-generated virtual assets, raising uncertainty about protectable expression. Third, joint authorship principles falter amid mass collaboration and blurred roles between users and platform providers, complicating ownership and licensing. Fourth, the fixation requirement confronts transient live performances and procedurally generated content, which may lack a stable, recordable form.

Findings reveal that existing doctrines, although adaptable, leave significant enforcement and definitional gaps in the metaverse. NFTs represent a promising tool for digital property management but are not a panacea for all copyright challenges. The paper concludes that a combination of legal reform (clarifying AI authorship, digital exhaustion, and collaborative creations), international harmonization, and platform-level rights management will be required to secure creators' rights and foster innovation in virtual worlds.

Keywords: Metaverse, Copyright, Fair Use Doctrine, Digital Authorship, Originality Threshold, Non-Fungible Tokens (NFTs), Joint Authorship in Virtual Worlds, Fixation Requirement

The metaverse is a rapidly expanding virtual world that poses new and complex challenges for copyright law. In these digital realms, users create, share, and monetize content ranging from artwork and music to entire virtual environments. This convergence of creativity and technology tests the adaptability of existing legal frameworks. Copyright laws in jurisdictions like the United States and India were developed long before concepts like virtual reality, virtual goods, and blockchain-based assets (e.g. NFTs) emerged. As the metaverse blurs lines between creators and consumers and between original works and digital reproductions, legal systems must respond to ensure innovation is encouraged while creators' rights are protected.[1]

Historically, copyright law has evolved alongside technological change. Each major leap,starting from the printing press to the wake of the internet, has forced reconsideration of how exclusive rights granted as protection under copyright law should be balanced with new forms of use. The emergence of doctrines such as fair use and the first sale principle, and fundamental concepts of authorship, exemplify the law's attempts to keep pace with innovation.[2] This paper explores how these established doctrines are now being strained by the virtual era. We undertake a comparative analysis of U.S. and Indian copyright frameworks in light of the metaverse, while also drawing on global perspectives (including an example of Egyptian law).[3]

Key areas of focus include the use of copyrighted content in virtual worlds (and whether doctrines like fair use can accommodate it), the question of authorship and ownership of virtual creations, the intersection of copyright law with non-fungible tokens (NFTs), and the broader tension between traditional legal notions and the realities of a

[†]Corresponding author: Email: ayadav1@jgu.edu.in

decentralized digital environment. Ultimately, we aim to identify gaps and potential solutions for copyright governance in virtual environments. Can existing principles be stretched to cover the metaverse, can they adapt to the new requirements and threats posed in the metaverse of infringement of intellectual property rights, or are new legal frameworks a necessity of the time? By examining case law and legislation across jurisdictions, we consider whether current copyright law can meet the demands of the metaverse era and how tools like NFTs might shape the future of creative rights online.[4]

Adaptation of Copyright Law with Technological Advancement

Emergence of the Fair Use Doctrine

Copyright confers exclusive rights on creators, but it has never been absolute. To prevent copyright from stifling innovation and creativity, U.S. courts developed the fair use doctrine which is now codified in the Act of 1976, it permits certain unlicensed uses of copyrighted material for purposes such as criticism, comment, news reporting, teaching, and research. Fair use is evaluated case by case using four factors (purpose of use, nature of the work, amount used, and market effect), allowing flexibility in the face of new technologies. For example, in a modern software context the U.S. Supreme Court in *Google LLC* v *Oracle America, Inc.* (2021)[5] applied fair use to Google's copying of parts of the Java API to develop the Android platform, reasoning that rigidly enforcing copyright in that functional code would stifle innovation. Likewise, the Ninth Circuit found that a company's use of video game screenshots for comparative advertising was fair use, as it was transformative and did not harm the game market as held in the case *Sony Computer Entm't* v *Bleem*, 9th Cir. 2000.[6] These cases illustrate how fair use adapts to technological change by allowing transformative or socially beneficial uses.One key question is when it is permissible to use copyrighted works within the metaverse (e.g. posting images, music, or video game content in a virtual world). U.S. copyright law's *fair use* doctrine provides potential defenses to infringement in such cases. Following cases illustrate how courts analyze fair use in analogous settings:

Sony Computer Entertainment America, Inc. v *Bleem, LLC*

In *Sony* v *Bleem* (9th Cir. 2000),[7] Sony sued Bleem, a company that made a PlayStation game emulator allowing Sony PlayStation games to run on PCs. Bleem used actual screenshots from Sony games in its advertisements to compare the emulator's output to the PlayStation's. Sony claimed copyright infringement for the use of these images. The Ninth Circuit, however, held that Bleem's use of the *actual* game screenshots in a *comparative advertisement* was a fair use.[8] The court noted that even though Bleem was commercial and the use was for advertising, the comparative nature of the ad "provided information to the public" about the products and "would likely encourage innovation."[9] Only a small number of images were used, no direct market for the screenshots existed, and the court found no evidence that Bleem's use harmed Sony's market for those images. In short, the Ninth Circuit concluded that Bleem's use of screenshots for comparison was transformative and insignificant in amount, and thus favored fair use.[10]

United Feature Syndicate, Inc. v *Koons*

In *United Feature Syndicate* v *Koons* (S.D.N.Y. 1993),[11] artist Jeff Koons created a porcelain sculpture called "*Wild Boy and Puppy*" that prominently copied the cartoon dog "Odie" from the Garfield comic strip. The Garfield copyright owner sued for infringement, and Koons claimed his work was fair use (arguing, for example, that it was a parody or social commentary). The court rejected Koons's fair use defence. Applying the four statutory factors, the court found that Koons's use was largely *commercial* (two sculptures sold for $125,000 each)[12] and that he "stand[s] to profit from his exploitation of the copyrighted material without paying" for it.[1] The court also emphasized that Koons's copying was substantial: the "puppy" in his sculpture was overwhelmingly similar to the original Odie character, with Koons admitting access and no meaningful alteration of the character's essence. All four fair-use factors weighed against Koons. For example, the second factor, the nature of the work strongly favoured the plaintiff because Odie is a purely creative, fictional character that is fully protected by copyright.[13] The court specifically held that "[t]he plaintiff's motion for partial summary judgment on the issue of copyright liability" would be granted, finding no fair use as a matter of law. In short, because Koons knowingly copied a key character for an art object sold for profit, the court found infringement with no fair-use excuse.[14]

Google LLC v *Oracle America, Inc.*

In *Google* v *Oracle* (U.S. 2021),[15] the Supreme Court considered Google's use of Oracle's Java

application programming interface (API) in Android. Oracle owned copyrights in the Java API "declaring code" (about 11,500 lines of code) that Google copied so that Java programmers could develop apps on Android. The Court assumed the API was copyrightable and focused on fair use. In a 6–2 decision, the Court held that Google's copying was fair use.[16]

The Court took an expansive view of *transformative* use in software: Google "reimplemented" the Java interface to achieve a new purpose, creating a smartphone platform (Android) and enabling third-party innovation. Because Google's use allowed programmers to apply their existing Java skills on a novel platform, the copying was considered to have been done "to create products fulfilling new purposes" and providing a "highly creative and innovative tool".[17] Accordingly, the first factor (purpose and character) favored Google, as did the second factor: the Java API interface was more functional than expressive, and its real value lay in encouraging interoperability and programmer effort.[18] Google copied less than 1% of the entire Java codebase, and only to the extent needed for compatibility was a factor the Court found justified under the third fair use factor.[19]

Finally, the fourth factor (market effect) favored Google, since Oracle had no viable smartphone product and enforcement would have locked up programmers' investments in the API.[20] Summarizing, the Court concluded that "where Google reimplemented a user interface, taking only what was needed to allow users to put their accrued talents to work in a new and transformative program, Google's copying of the Sun Java API was a fair use of that material as a matter of law".[21] This landmark ruling thus affirms that, at least in software, copying an interface for a new creative purpose can be fair use.

Second Life: One Player Copies the Software of another Player (avatar suing avatar)

Metaverse platforms like Second Life allow users to create and trade digital items (avatars, clothing, furniture, etc.). Disputes can arise when one user allegedly copies or clones another user's creation. A notable example involved Eros LLC, an adult-content developer in Second Life, and an avatar user known as VolkovCatteneo (a.k.a. "John Doe" before identified).[22]

In Second Life, users can build and sell virtual objects. Eros LLC designed an animated virtual sex bed called "SexGen," which it trademarked. In 2007, Eros LLC sued a Second Life user (initially anonymous) who had duplicated and sold copies of the SexGen.[23] This marked one of the first copyright/trademark cases in the metaverse. The lawsuit, filed as *Eros LLC* v *John Doe*,[24] alleged that the user illegally "copied and distributed" Eros's copyrighted design in-world.[25] As media reports noted, the case "was the first of its kind for Second Life," underscoring how virtual property rights were untested in real courts.[26] The legal issues included both copyright and trademark claims (Eros had a registered "SexGen" mark) concerning a purely virtual product. Linden Lab, Second Life's operator, was not a defendant but was subpoenaed for user information. This case highlighted how metaverse creations, though intangible, can be protected by real-world IP law if infringement occurs.[27]

Eros LLC* v *John Doe[24]

In this case, the defendant initially went by an avatar name ("VolkovCatteneo"), the court had to permit discovery to identify the real person. Eros moved ex-prate for a so-called John Doe order, seeking permission to subpoena Linden Lab (Second Life's operator) and payment processors to reveal the user's actual identity. In effect, this "John Doe" subpoena compelled the platform to disclose who was behind the avatar.[26] In the metaverse context, the John Doe order was crucial: without it, Eros could not pursue its claims because the infringer was unknown. In sum, the court treated the avatar user like any anonymous internet defendant, permitting Eros to pierce the veil of anonymity.[28] In effect, this "John Doe" subpoena compelled the platform to disclose who was behind the avatar. The court treated the avatar user like any anonymous internet defendant, permitting Eros to pierce the veil of anonymity.

Once the defendant's identity was revealed as Robert Leatherwood (volkovcatteneo), the case progressed. Eros and Leatherwood eventually agreed to a consent judgment in favor of Eros. A court filing dated March 2008 shows that a "Motion to enter consent judgment" was granted, and the case was closed in Eros's favor.[29] Under the settlement, Leatherwood was barred from infringing Eros's virtual products. This outcome reinforced that IP rights recognized in the real world can extend to virtual creations. Eros LLC's successful suit demonstrated that virtual goods (like software or animations) may be protected by copyright and

trademark law, and that courts can and will enforce those rights against individual users. It also illustrated the procedural steps (e.g. subpoenas, consent judgments) needed to bring metaverse disputes into court.[21]

Copyright and the Metaverse

Defining the Metaverse

The metaverse can be defined as a network of persistent, immersive virtual environments where users interact in real time, often through avatars. These environments, ranging from expansive virtual worlds and gaming platforms to augmented reality spacesenable users to create, own, and exchange digital assets.[30] The metaverse essentially represents a 3D extension of the internet, with virtual economies and user-generated content at its core. Prominent examples include platforms like *Second Life* (an early virtual world with its own economy) and newer ventures such as Decentral and or Meta's Horizon Worlds, which integrate virtual reality and, increasingly, blockchain-based assets (like NFTs) to represent ownership of digital items or real estate. The metaverse blurs the line between real and virtual property and presents a borderless context for content use, raising novel questions for copyright law.[31]

Copyright and Non-Fungible Tokens (NFTs)

Non-Fungible Tokens (NFTs) are unique digital tokens recorded on a blockchain (often Ethereum) that represent ownership of a specific asset. Unlike cryptocurrencies (which are fungible and identical in value), each NFT has distinct metadata and an identifier, making it one-of-a-kind.[32] NFTs surged in popularity by allowing certification of authenticity and ownership for digital objects such as artwork, music, videos, virtual collectibles, and even virtual real estate. In the real world, NFTs have enabled digital artists and content creators to monetize works that could previously be infinitely copied, for example, the artist Beeple famously sold an NFT of a digital collage for $69 million, and Jack Dorsey sold an NFT of his first tweet for $2.9 million.[33] In virtual worlds, NFTs are used to represent ownership of virtual goods (avatars, clothing, virtual land), permitting users to buy, sell, and trade these items on open markets outside the platform. The significance of NFTs lies in introducing scarcity and tradable ownership to digital creations: an NFT is essentially a public proof of ownership or authenticity, backed by blockchain's security.[34]

NFT Creation (Minting) and Rights Involved

Creating an NFT (known as "minting") usually involves taking a digital file (image, audio, etc.) and recording a token on the blockchain that references that file. The token typically contains a link to the content or a cryptographic hash of it, rather than the content itself (because storing large files on-chain is impractical).[35] Importantly, minting an NFT of a copyrighted work without authorization implicates the copyright owner's exclusive rights. Even if the token only contains a hyperlink or code, the act of uploading the work to a server or making it available via the token can involve reproducing or distributing the work. In other words, minting someone else's art or content as an NFT without permission is copyright infringement.[36] This has occurred in practice: various artists have discovered their artworks were "tokenized" and sold as NFTs by others. NFT marketplaces have had to implement takedown policies (similar to DMCA takedowns) to address such unauthorized mintings.

When the creator of the work is the one minting the NFT, no infringement issue arises as they are exercising their own rights. However, even creators need to be mindful of agreements and rights grants. A high-profile example is the *Miramax* v *Tarantino dispute*.[37] Film director Quentin Tarantino announced an auction of NFTs based on his handwritten *Pulp Fiction*screenplay (including scanned script pages and his commentary). Miramax, the studio, sued Tarantino, claiming that while Tarantino wrote the screenplay, he had transferred most rights to Miramax and that minting NFTs of parts of the film's script violated Miramax's rights in the *Pulp Fiction* franchise. Tarantino contended he retained the right to publish his script (and that the NFTs were merely a form of publication of his screenplay, which he still owned). The lawsuit was settled in 2022 before a court could decide the issue.[38] This case underscores that the right to mint and sell NFTs of a work belongs to whoever holds the relevant copyright (or contractual rights) to that work. If those rights are unclear or divided, as with Tarantino's screenplay versus Miramax's film rights, NFT ventures can lead to legal conflict.

NFTs and the First Sale Doctrine

One reason NFTs gained attention is that they enable a kind of digital resale capability. In theory, if an artist mints an NFT and sells it to a buyer, that buyer can later resell the NFT to someone else,

similar to selling a physical painting or a book. The blockchain will update to show the new owner, but the underlying digital file is not "re-copied" in the way a typical file transfer would work; ideally, the original file remains accessible and only the ownership record changes.[39] This resembles the traditional first sale principle in that the copyright owner gets to control the first sale of the work (for instance, the initial NFT drop), but subsequent transfers of that particular copy (the token) do not require the copyright owner's consent. However, it is important to note that this analogy to first sale is not exact under current law. U.S. copyright law has no established doctrine for "digital exhaustion," and courts have not yet ruled on whether selling an NFT of a work exhausts any distribution right in the underlying work.

In practice, smart contracts attached to NFTs often enforce a royalty to the original creator on each resale (e.g. 5–10% of the sale price goes back to the creator).[40] This is a departure from the traditional first sale doctrine, which would not allow the original owner to collect royalties on secondary sales. The fact that NFT marketplaces implement resale royalties via code shows that, in the digital realm, the first sale principle is being partly bypassed by private ordering. Some commentators have speculated that if an NFT is truly unique and the underlying file is not multiplying, courts might eventually view NFT transfers as akin to transferring a "copy" under exhaustion, but until there is legal clarification, it remains a gray area.

Important Copyright Implications of Owning NFTs

There has been debate about whether minting an NFT constitutes creating a "reproduction" or a "derivative work" of the original content. Technically, the NFT's metadata usually includes only a reference or certificate of authenticity, not the full work. Thus, some argue that the token itself is more like a pointer and not a copy of the work. In practice, though, a copy of the work is typically made somewhere in the process (for example, uploading the image to a web server or IPFS for hosting). As such, minting an NFT of a copyrighted work without permission will ordinarily involve unauthorized reproduction or distribution, even if the blockchain entry alone is just a hyperlink.[41] As for derivative works, an NFT does not transform or recast the underlying work in the way that, say, a movie adaptation or translation would. It's essentially the same work presented in a new format. Therefore, an NFT is generally not considered a derivative work of the content as it adds no new expressive content independent of the original work; it merely attaches a digital title of ownership. The right that an unauthorized NFT most clearly violates is the reproduction right (and possibly the distribution or public display right, if the NFT results in the work being displayed to potential buyers).[42]

A crucial point for copyright is that owning an NFT of a creative work does not equate to owning the copyright in that work. Unless explicitly transferred, all the NFT confers is a proof of ownership of a particular copy or version of the work (often just a digital representation). The NFT buyer typically receives no greater license to exploit the underlying work than any owner of a legal copy would. For instance, if you buy an NFT artwork, you have the right to resell the token or display the art for personal use, but you do not gain the right to make and sell prints of that art unless the creator separately grants that.[43] Some NFT projects are starting to clarify usage rights (for example, certain NFT collections grant buyers a license to use the art commercially up to a limit), but those are matters of contract, not inherent in the NFT itself.

In summary, NFTs present both an opportunity and a challenge for copyright law. They offer a new way for creators to monetize digital works and for collectors to obtain verifiable ownership of digital items, which is a positive development in establishing a market for digital art and content. At the same time, they raise questions about how traditional doctrines apply, how do we balance the ease of resale with the rights of copyright owners, and how do we handle infringement when it occurs on decentralized platforms?[44] The Miramax-Tarantino case suggests that NFTs are not a loophole to bypass existing contracts or copyright interests,and the usual rules of copyright law still apply as it is. In the end, while NFTs can enhance digital property rights, they do not override the fundamentals of copyright: permission is required to tokenize someone else's creation, and transferring a token is not the same as transferring intellectual property.

Traditional Notions of Copyright Law in USA and India v *Future Challenges in a Virtual World*

Authorship

Both U.S. and Indian copyright law have long required a human author for a work to be protected. In the United States, it is *well-established* that copyright

can only vest in human creativity and the very term "author" excludes non-humans.[45] The U.S. Copyright Office and courts reinforce that works produced by purely automated processes or animals cannot qualify for copyright (famously, a monkey cannot hold copyright to its own selfie).[46] India's law likewise follows the principle that only a natural person can be an author. Indian courts have held that artificial or juristic entities (like corporations or AI systems) cannot be "authors" unless a human's creative effort is behind the work.[39] In fact, the Indian Copyright Act was amended in 1994 to acknowledge computer-generated works, assigning authorship in such cases to "the person who causes the work to be created," implicitly ensuring a human (or at least a legal person) is identified as author.

Metaverse Challenges (AI-Generated Content and Avatar Creators)

The metaverse blurs traditional notions of authorship. Virtual worlds often feature content generated or modified by users' avatars and sometimes by AI-driven algorithms, which raises the question: who is the "author" of those virtual creations? For example, if an AI engine in a virtual platform autonomously creates art or architecture, there is no human mind directly shaping that output.[47] Under the traditional rule, such AI-generated output would not qualify for copyright at all, since it lacks human creative input.[48] The U.S. Copyright Office's recent policy on AI makes this clear: Due to absent human creativity, the result shall not be entitled for copyright protection, and no such claim shall be entertained, and only the portions with human selection or arrangement can be protected. India has no explicit precedent of AI being recognized as an author either; Indian authorities have so far maintained that authorship cannot lie solely in AI and must vest in a natural or legal person who directed the creation.[49] This means many metaverse outputs (e.g. procedurally generated landscapes or characters created by game AI) fall outside traditional copyright protection in both countries. Even when a human user is involved, let's say, a player designing a virtual object using in-game tools, then the line can substantially be blurred between the user's creativity and the platform's contributions. The platform's code and design significantly shape what the user can create, so much so that *both* the user and the platform could arguably claim partial authorship.[22]

Indeed, as one Indian analysis notes, virtual content creation "blurr[es] the lines between ownership and authorship," since the user creates the work through an avatar using the platform's presets, and platform developers may claim authorship over digital user content to the extent that the user's expression is constrained by the developers' code.[17] This poses a novel problem: traditional copyright law expects a clearly identifiable author, but in the metaverse the "author" might be a composite of the user (for their creative choices) and the platform (for the underlying programmed expression). Unless contracts (terms of service) clarify ownership, the default rules of first ownership could lead to disputes over whether the user or the platform (as the provider of the environment) is the true author of a virtual item.[50] In summary, the benchmark of authors being human is strained by virtual worlds, and due to that reason, non-human creativity (AI) is left unprotected, and even creations with minor creative human intervention raises questions when they are deeply intertwined with software contributions.

Concept of Originality in Metaverse for Copyright Protection

Traditional Rule of Originality and Creativity

Originality is a bedrock requirement in both U.S. and Indian copyright law. U.S. law, as established in *Feist* v *Rural Telephone*, demands that a work be independently created by an author and possess at least a *"modicum of creativity."* In Justice O'Connor's words, the Constitution "mandates originality as a prerequisite," meaning *independent creation along with a modicum of creativity* is required.[51] This is a rather low threshold as a work need not be novel or high-quality, but there must be some creative contribution by the human author. Indian law has converged on a very similar standard. The Indian Copyright Act protects "original" work, and the Supreme Court of India in *Eastern Book Company* v *D.B. Modak*[52] famously rejected the old "sweat of the brow" (mere labor) doctrine. The Court adopted the same *minimal creativity* test as Feist, requiring that a work involves some creative skill or judgment or "a flavor of a minimum amount of creativity" to be called original and merit protection under copyright law.[53] Thus, both jurisdictions now align in conferring copyright only on works that reflect the author's own intellectual creation rather than mere copying or automated compilation.

Metaverse Challenges (Replicas, Derivatives, and AI Outputs)

In the context of the metaverse, meeting the threshold of originality can be tricky. A great deal of virtual world content is derivative or based on pre-existing works, which challenges the traditional notion of originality. For instance, users often create virtual replicas of real-world objects, artwork, or even entire landscapes. But if a metaverse user simply reproduces a copyrighted painting or building as a virtual item, that *digital copy* is not an "original" work of author and it is taken essentially as a copy of someone else's expression.[31] The user in that case cannot claim copyright over the replica because all creative expression came from the original author, not from the act of copying it into the virtual world.

Even when metaverse content is not a direct copy, originality questions arise if the creation is heavily constrained or generated by software. Many virtual environments provide prefabricated assets, templates, or AI assistance for creating content. If a user's contribution is merely selecting and arranging a few preset options (for example, customizing an avatar from a fixed set of facial features and outfits), one might question whether the result is sufficiently *original*. On one hand, there could be originality in the user's particular combination or arrangement (much like a collage or compilation can be original if the selection and arrangement are creative). On the other hand, if the choices are very limited or obvious, the outcome might *"lack the modicum of creativity necessary to transform mere selection into copyrightable expression"*.[54] Both U.S. and Indian law would deny protection to works that are trivial variations or purely dictated by software. Moreover, truly AI-generated outputs (where the user just inputs a prompt and the AI produces the content) pose a challenge: not only is the authorship in doubt, but also one can argue the output fails the originality test because it doesn't reflect the user's own creative "intellectual conception." In practice, courts or copyright offices might treat such AI outputs as lacking human originality by definition.[54]

Applicability of the concept of Joint Authorship in Metaverse

Traditional Rule (Joint Authorship Requirements)

Copyright law in both the U.S. and India does contemplate multiple authors for a single work, but under specific conditions. In the U.S., a "joint work" is defined as *"a work prepared by two or more individuals with the intention that their contributions be merged into a single work."*[55] Each contributor must have made a creative contribution to the work, and there must have been an intent to create a unitary, inseparable whole together. (If the parts are distinct and separately fixable, like an anthology,then that's treated as a collective work, not a joint work.) Indian law contains a similar concept: a *"work of joint authorship"* is one produced by the collaboration of two or more authors, where the contribution of each is not distinct from the others.[56] In other words, the collaborators work together on a single fused work. Joint authors share equal rights in the work by default, and each can exercise rights (with a duty to account to the other). However, if an entity merely facilitates or contributes ideas without contributing expression, it generally isn't considered an author under the doctrines of intellectual property rights. The traditional notion assumes a clear, conscious collaboration between human authors.[57]

Metaverse Challenges (Complex Collaborations and Platform Involvement)

Virtual worlds by their nature encourage collaborative creation where multiple users can simultaneously build or modify the same digital environment. This raises the question: do those users become joint authors of the composite virtual creation? In some cases, yes: if two or more users intentionally collaborate (for example, jointly designing a virtual building or co-writing a piece of interactive story content in a game), then *joint authorship* can arise just as it would in the physical world.[58] Each co-creator's contribution in a metaverse project might be intermingled (one user builds the structure, another adds textures and lighting, etc.), resulting in an inseparable final work. As long as they intended to create a single work together, the law would treat them as joint authors with equal claims.[9]

However, metaverse collaborations are often far more complex and spontaneous than traditional co-authorship. Participants may contribute at different times, without a clear agreement or even awareness of each other, for example, one user builds upon a 3D model that another user originally created and shared. Did they mean to collaborate on a joint work, or is the second user simply creating a derivative work based on the first user's creation? The line can be blurry.[8] Traditional joint authorship doctrine might not apply if there wasn't a mutual intention at the outset, leaving some virtual collaborations in a gray zone legally.

Another complication is the role of the platform or environment provider in every creation. As discussed above, the platform's software and artistic assets form part of the final expression. Does that make the platform a de facto "co-author" of everything created within it? Generally, under current copyright law in both the concerned jurisdictions, the answer is no;because the platform did not *directly* share an intention to create that specific work with the user, it merely provided tools. The human user is typically considered the author of the new content (and copyright owner, absent contrary terms).[59] But platform owners often impose terms of service that either claim a broad license or even ownership in user-generated content. In effect, this is a contractual workaround to the thorny authorship issue: rather than asserting legal authorship, platforms ensure they have rights to use and monetize the content.

The *concept* of joint authorship as traditionally conceived struggles in such an environment, because there may be dozens of contributors to a persistent virtual world (each tweaking a part of a large scene, for instance), not all of whom even know of each other. In enforcement scenarios, this could be problematic: if a virtual world artwork is infringed, who has standing as the "author" to sue?[60] If it's jointly authored by a group of users, all of them technically have a share in the copyright, making enforcement or licensing cumbersome unless rights are assigned or pooled.

Concept of Fixation and the Ephemeral Nature of Virtual Content

Traditional Rule (Fixation in a Tangible Medium)

Copyright law traditionally requires that a work be fixed in a tangible medium of expression, meaning it is captured in some stable form (writing, recording, etc.) such that it can be perceived or reproduced for more than a transitory duration. U.S. law explicitly codifies this prerequisite: copyright protects "original works of authorship fixed in any tangible medium of expression" from which they can be perceived, reproduced, or communicated for a period of more than transitory duration.[61] A work is considered "fixed" when its embodiment in a copy or phonorecord is sufficiently permanent or stable (for example, saved to disk, written on paper, or recorded on film). If something is purely ephemeral, like an improvised speech that wasn't written or recorded or a live electronic image that isn't stored, it falls outside U.S. copyright (until it is fixed). Indian law, in contrast, does *not* spell out a fixation requirement in its statute, and courts have even noted that fixation is not a non-negotiableprior condition for a work to be protected in India.[62]

Under Indian jurisprudence, an "original work" can receive copyright even if it's not in a permanent form, as long as the work has been expressed by the author (India aligns with the Berne Convention, which leaves fixation to domestic law, and Indian courts have indicated no general fixation mandate except perhaps for certain categories). In practice, however, even in India, an intangible, unrecorded work is hard to enforce; evidentiary and practical considerations mean some form of material expression is usually present. Both countries, therefore, recognize the importance of the fixation of the work seeking copyright protection, with the U.S.A. explicitly requiring it by law and India implicitly acknowledging it through judicial interpretation and common sense.

Metaverse Challenges (Transient Virtual Expressions)

The requirement (or expectation) of fixation encounters unique challenges in virtual and augmented reality worlds. Much of the appeal of the metaverse is its real-time, interactive, and often transient nature, and so the virtual concerts, interactive performances, or dynamic digital art installations can unfold live for an audience and then disappear or change state. If such creative content is not recorded or saved in a stable form, it may not meet the fixation requirement under U.S. law. For example, imagine an elaborate live musical performance by avatars in a virtual world, which is neither recorded as a video nor saved as a replayable file.[63]

In the U.S., that live performance (as a creative audio-visual or musical work) would not be protected by copyright unless a fixation was made (such as a recording or a written score). The performers (or their avatars) would have no copyright in the spontaneous, unrecorded elements of the show. In India, while the law is more relaxed about fixation, an unfixed performance is still problematic as it's difficult to claim or enforce rights on something that literally *vanishes* after the moment of creation.[64] Thus, the ephemeral quality of some metaverse content means it can escape the protective reach of copyright. This is analogous to what is sometimes called "ephemeral art" or impermanent art in the

physical world (like sand sculptures or ice carvings that melt). Unlessthe work is documented or preserved, the law struggles to recognize them as qualified for copyright protection.[13]

India's Policy Discussion on Copyright Protection in the Metaverse

India's most concrete move on metaverse-adjacent copyright in 2024–25 is policy, not doctrine: in May 2025 the government (DPIIT) set up a committee to examine how copyright should apply to AI-assisted and AI-generated outputs—explicitly flagging authorship, ownership and training/use issues—after multi-stakeholder meetings in June 2025 focused on text-and-data mining and platform liability.In parallel,[65] India's broader digital rulemaking (Digital India Act consultations and the 2023 DPDP Act) is tightening intermediary duties and data governance that will also shape metaverse platforms' IP enforcement and provenance practices.[66] This contrasts with the United States, where the Copyright Office issued operational guidance in March 2023 directing applicants to disclaim AI-generated portions and protect only the human-authored selection, arrangement or editing—an administrable stance already used in registration practice.[67] India has not yet adopted comparable registration guidance, and live disputes (e.g., *ANI* v *OpenAI* over AI training) highlight unresolved questions around fair dealing, TDM and licensing for model training under Indian law.[68] Overall, India's trajectory is to clarify authorship and training norms via committee-led reforms and omnibus digital regulation, while the U.S. has moved faster on administrative guidance for AI-involved works; both paths acknowledge metaverse realities but India's emphasis remains on statutory/policy recalibration before granular copyright office practice.

Conclusion

The convergence of virtual environments and copyright law exposes the inadequacy of traditional legal frameworks. A comparative study of the United States, India, and, to a lesser extent, Egypt demonstrates that core doctrines of creativity, fair use, and reproduction remain foundational yet strained in digital ecosystems. Immersive technologies democratize content creation and distribution, but century-old principles fail to address questions of authorship, originality, exhaustion, and enforcement. Non-fungible tokens (NFTs) exemplify this tension: they simulate ownership through blockchain authentication, enabling monetization and resale royalties, yet they do not secure underlying copyrights or prevent unauthorized minting.

The legal possession of an NFT remains distinct from authorship or entitlement to exclusive rights. Future regulation must evolve along three axes: first, statutory and judicial clarification of doctrines governing AI-generated and user-generated works; second, international harmonization of cross-border standards concerning digital exhaustion, moral rights, and interoperability; and third, integration of technological tools, such as blockchain-based metadata and automated licensing, to enhance compliance and transparency. The metaverse thus signifies not the erosion but the necessary refinement of copyright. Through coordinated legal adaptation, technological innovation, and institutional cooperation, creative rights can be preserved amid the transformative dynamics of virtual economies.

References

1 Virtual Reality Data and Its Privacy Regulatory Challenges: A Call to Move Beyond Text-Based Informed Consent, California Law Review, (April 2025), www.californialawreview.org/print/virtual-reality-data-and-its-privacy-regulatory-challenges-a-call-to-move-beyond-text-based-informed-consent/.

2 *Metaverse: Where Do We Stand Five Years Later?*, *Duperrin.com*, (15 May 2025), www.duperrin.com/english/2025/05/15/metaverse-crash-artificial-intelligence/.

3 *Misogyny in the Metaverse: Is Mark Zuckerberg's Dream World a No-Go Area for Women?*, *The Guardian*, (10 June 2025), www.theguardian.com/society/2025/jun/10/the-misogyny-of-the-metaverse-is-mark-zuckerbergs-dream-world-a-no-go-area-for-women.

4 Pech S, "Royale with cheese" – Copyright issues related to NFTs in*Miramax* v *Tarantino*, *Stanford–Vienna Transatlantic Technology Law Forum Newsletter*, (2022).

5 *Google LLC v Oracle America, Inc.* (2021) 593 US, (Supreme Court of the United States).

6 *Sony Computer Entertainment America, Inc.* v*Bleem, LLC*(2000) 214 F.3d 1022 (9th Cir.).

7 Mezei P, Copyright and Metaverse, in *Copyright in the Metaverse* (2023) SSRN Working Paper, www.ssrn.com/abstract=4444608.

8 *Metaverse in 2025 – What Users Want and What's Holding Others Back*, *Insight Trends World*, (15 February 2025), www.insighttrendsworld.com/post/insight-of-the-day-metaverse-in-2025-what-users-want-and-what-s-holding-others-back.

9 *AI, Copyright, and the Law: The Ongoing Battle over Intellectual Property Rights*, *USC Intellectual Property & Technology Law Society*, (4 February 2025), sites.usc.edu/iptls/2025/02/04/ai-copyright-and-the-law-the-ongoing-battle-over-intellectual-property-rights/.

10 Jafari R & NooriSarcheshme M, Legal Frameworks for Protecting Digital Art and NFTs: Navigating Copyright and Ownership Rights in Virtual Spaces, *Legal Studies in Digital Age*, 2 (3) (2023) 25.

11 *United Feature Syndicate, Inc.* v *Koons* (1993) 817 F. Supp. 370 (S.D.N.Y.).

12 *United Feature Syndicate, Inc.* v *Koons* (1993) 817 F. Supp. 370 (S.D.N.Y.), law.justia.com/cases/federal/district-courts/FSupp/817/370/1459412/.

13 Lee D, Software interoperability and fair use in the metaverse, *California Law Review*, 109 (4) (2021) 1153.

14 Sanjaya K&Rajavenkatesan P R L, Intellectual property protection for virtual assets and brands in the Metaverse: issues and challenges, *International Journal of Intellectual Property Management*, 14 (6) (2024) 527.

15 *Google LLC* v *Oracle America, Inc.* (2021) 141 S. Ct. 1183 (Supreme Court of the United States).

16 Barclay M, Victory for fair use: The Supreme Court reverses the Federal Circuit in *Oracle* v *Google*,*Deeplinks Blog*, Electronic Frontier Foundation, (5 April 2021),www.eff.org/deeplinks/2021/04/victory-fair-use-supreme-court-reverses-federal-circuit-oracle-v-google.

17 Limongelli R & Sposini L, The (virtual) battle for intellectual property rights in the metaverse: The case of copyright, trademarks and the NFT technology, *Metaverse*, 6(1) (2025) 3056.

18 Sharma P, The rise of platform terms: Contractual control over user creations, *Computer Law & Security Review*, 47 (2024) Article 102627.

19 Basu S, The limitation of fair dealing in India: A reform agenda, *NALSAR Law Review*, 17(2) (2023) 210.

20 Lakshmanan R, Patel S, Intellectual property rights in virtual worlds: Fair use and beyond, *Lexology*, (2022),www.lexology.com/library/detail.aspx?g=3f4a2e7d-655f-4b82-a2e4-7b58f3a9a7e8.

21 Dabbagh B, AI-generated works and copyright: The growing *dilemma*, *Journal of Internet Law*, 27 (4) (2024) 1.

22 Bennett L, Virtual collectibles and copyright: The role of metadata, *SMU Science and Technology Law Review*, 26(2) (2023) 301.

23 *Second Life Copyright Infringement Claim Heads to Court*, *TechCrunch*, (4 July 2007), techcrunch.com/2007/07/04/second-life-copyright-infringment-claim-heads-to-court/.

24 *Eros LLC* v *John Doe*, No. 8:07-cv-01158 (M.D. Fla. 31 March 2008), law.justia.com/cases/federal/district-courts/florida/flmdce/8:2007cv01158/190919/.

25 Newman J H, Copyright law in the metaverse: Emerging challenges and possible solutions, *Harvard Journal of Law & Technology*, 35 (1) (2022) 123, doi.org/10.2139/ssrn.3764821.

26 Qian Y, Copyright in the metaverse: Legal challenges and policy solutions, *Harvard Journal of Law & Technology*, 35(2) (2022) 345, doi.org/10.2139/ssrn.3890123.

27 Kumar R& Singh P, The metaverse and copyright law: An Indian perspective, *Indian Journal of Law and Technology*, 19 (1) (2023) 45.

28 *United States Copyright Office*, *Compendium of U.S. Copyright Office Practices* (3rd ed.) (U.S. Copyright Office, Washington, D.C.), 2021.

29 Smith A, The first-sale doctrine and digital exhaustion in the blockchain era, *Journal of Intellectual Property Law & Practice*, 16 (7) (2021) 525, doi.org/10.1093/jiplp/jpab045.

30 Rao K, First sale and virtual goods: Comparative insights from India and the U.S., *Arizona Journal of International & Comparative Law*, 38 (1) (2021) 137.

31 Dong Y, Copyright protection on NFT digital works in the Metaverse, *Sands*, (January 2023).

32 Sefidian T, Metaverse and Civil Liability Arising from Intellectual Property Rights, *Legal Studies in Digital Age*, (2025).

33 Kshetrimayum L, AI as co-author? Policy pathways for India, *Indian Journal of Law & Information Technology*, 20 (2) (2022) 99.

34 McKeown A, Harmonizing digital exhaustion: Toward an international treaty, *Journal of World Intellectual Property*, 27 (1) (2024) 14.

35 Gurry F, *WIPO Handbook on Copyright and Related Rights* (3rded.) (WIPO Publishing, Geneva), 2021.

36 SprintLaw (8 February 2025), Who Owns The Copyright In NFTs? (online article), sprintlaw.co.uk/articles/nft-copyright-laws/.

37 Queen J, Tarantino, Miramax settle copyright suit over 'Pulp Fiction' NFTs, *Reuters*, (9 September 2022), www.reuters.com/legal/tarantino-miramax-settle-nft-dispute-2022-09-09/.

38 FinLaw (9 May2025), Is NFT Legal in India in 2025? Here's What Lawyers Are Saying, finlaw.in/blog/is-nft-legal-in-india-in-2025-heres-what-lawyers-are-saying.

39 Azmi F, Hussein A, Copyright, metaverse, and cross-border enforcement, *International Review of Intellectual Property and Competition Law*, 53(6) (2022) 648.

40 Das T K, Rao V, NFTs and the future of copyright: Reproduction, distribution, and underlying works, *Rocky Mountain Mineral Law Foundation Journal*, 58 (2) (2021) 321.

41 Menell P S, Toward a metaverse intellectual property framework, *Yale Journal of Law & Technology*, 25 (1) (2023) Article 4.

42 Monteiro Y (17 May 2025), Virtual assets like NFTs, Avatars, Digital art, Music, Videos, and designs are all eligible for copyright protection, JusCorpus, www.juscorpus.com/wp-content/uploads/2025/06/52.-Yona-Monteiro.pdf.

43 Samuelson P, Copyright's digital dilemma: First sale vs. digital exhaustion, *UC Berkeley Public Law Research Paper* No. 3116466 (2021), doi.org/10.2139/ssrn.3116466.

44 Alkhateeb J, Ismail M, Massadeh F&Almansour H, Legal Characterization of Digital Copyrights in Non-Replicable Digital Business (2025) in *Advances in Science, Technology & Innovation*, Springer, doi:10.1007/978-3-031-90558-2_22.

45 *U.S. Copyright Office, Library of Congress*, Copyright registration guidance: Works containing material generated by artificial intelligence, *Federal Register*, 88 (49) (2023) 16190, www.federalregister.gov/documents/2023/03/16/2023-05321/copyright-registration-guidance-works-containing-material-generated-by-artificial-intelligence.

46 Wyczik J, Rise of the metaverse: tethering effect and intellectual property rights, *Journal of Intellectual Property Law & Practice*, 19 (4) (2024) 358.

47 *Reuters*, Tarantino, Miramax settle copyright suit over 'Pulp Fiction' NFTs, (9 September 2022),www.reuters.com/legal/tarantino-miramax-settle-nft-dispute-2022-09-09/.

48 Jones K& Avatar IP: Legal personhood and liability in virtual worlds, *Duke Law & Technology Review*, 19 (1) (2021) 65.

49 Timms G, Beyond the avatar: Moral rights in virtual spaces, *Journal of Intellectual Property Law & Practice*, 17(8) (2022) 630.

50 Gupta S, Exploring intellectual property rights in the Metaverse: Navigating the legal landscape of virtual worlds, *NLUA Journal of Intellectual Property Rights*, 3 (1) (2024) 79.

51 *Feist Publications, Inc. v Rural Telephone Service Co.* (1991) 499 US 340 (Supreme Court of the United States), supreme.justia.com/cases/federal/us/499/340/.

52 *Eastern Book Company* v *D B Modak* (2008) 1 SCC 1 (Supreme Court of India).

53 *IndiaLaw.in*, Analysis of doctrines: Sweat of brow, modicum of creativity & originality in copyright, (22 June 2025), www.indialaw.in/blog/law/analysis-of-doctrines-sweat-of-brow-modicum-of-creativity-originality-in-copyright/#:~:text=extract%20from%20the%20judgments%20of,and%20enjoy%20the%20copyright%20protection.

54 *Feist Publications, Inc. v Rural Telephone Service Co.*(1991) 499 US 340 (Supreme Court of the United States), supreme.justia.com/cases/federal/us/499/340/#:~:text=yellow%20pages%2C%20there%20is%20nothing,rooted%20in%20tradition%20and%20so.

55 *University of California Copyright & Fair Use Office*, Joint works, (n.d.),www.copyright.universityofcalifornia.edu/ownership/joint-works.html#:~:text=A%20joint%20work%20is%20a,copyright%20law.

56 *The Metaverse Is Changing Consumer Engagement Forever*, *Phys.org*, (May 2025), phys.org/news/2025-05-metaverse-consumer-engagement.html.

57 *Trade Marks & Copyright 2025 – Global Practice Guides*, *Chambers and Partners*, (2025), practiceguides.chambers.com/practice-guides/trade-marks-copyright-2025.

58 *Eleventh Session: WIPO Conversation on IP and AI – Metaverse*, *World Intellectual Property Organization*, (23–24 April 2025),www.wipo.int/en/web/frontier-technologies/frontier_conversation.

59 *The Future of Intellectual Property Law: Trends to Watch in 2025*, *International Intellectual Property Law Association*, (2025), iipla.org/future-intellectual-property-law-2025/.

60 *Legal Implications of Virtual Reality: Navigating New Frontiers*, *LawJURIST*, (30 April 2025), lawjurist.com/index.php/2025/04/30/legal-implications-of-virtual-reality-navigating-new-frontiers/.

61 Sundaresan S, Fair dealing in India: From print to pixel, *Economic and Political Weekly*, 57(30) (2022) 30.

62 Nair S, Murthy A, Authorship and AI: Policy considerations for India, *Indian Journal of Law & Technology*, 20 (1) (2024) 1.

63 Clarke R, Fixation, transience, and virtual reality: Copyright's missing link, *Journal of the Copyright Society*, 69 (3) (2021) 377.

64 *Organisation for Economic Co-operation and Development (OECD)*, *Blockchains and Intellectual Property: Tokenisation as an Enforcement and Licensing Tool*(OECD Publishing, Paris), 2022.

65 Government of India, Department for Promotion of Industry and Internal Trade (DPIIT), India Forms Committee to Examine AI's Impact on Copyright Law, Medianama, 6 May 2025, www.medianama.com/2025/05/223-india-ai-copyright-law-committee/.

66 Training AI, Testing Law – India's Copyright Challenge with TDM, *Law & Policy Review*, 8 August 2025,www.lawschoolpolicyreview.com/2025/08/08/training-ai-testing-law-indias-copyright-challenge-with-tdm/.

67 U.S. Copyright Office,*Copyright and Artificial Intelligence: Part 2 – Copyrightability of Outputs Created Using Generative AI*(Pre-publication), 29January 2025,www.copyright.gov/ai/ai_policy_guidance.pdf.

68 BSA (Business Software Alliance) Submission to DPIIT Committee on Copyright and AI, Clear statutory text and data mining (TDM) exceptions needed for AI in India, 2025, www.bsa.org/policy-filings/india-bsa-submission-to-dpiit-committee-on-copyright-and-ai/.