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Copyright in the Digital Era: Evolution, Challenges and Future Perspectives

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ABSTRACT

The advent of the digital era has profoundly transformed the landscape of copyright law, presenting both groundbreaking opportunities and unprecedented challenges. This paper delves into the evolution of copyright frameworks in response to technological advancements, highlighting the shift from traditional concepts to adaptive policies tailored for digital environments. Key challenges such as digital piracy, enforcement complexities, and the ethical implications of AI-generated content are examined, alongside emerging issues like the ownership of digital creations and the balance between accessibility and exclusivity. Future perspectives explore sustainable solutions, including international harmonization, evolving legal definitions, and interdisciplinary approaches that integrate technological innovation with equitable cultural preservation. This comprehensive analysis aims to contribute to the discourse on reshaping copyright for a digitally interconnected world while safeguarding creative expression and cultural heritage.

Keywords: Copyright, Artificial intelligence, Digital Piracy, Innovation, Ownership.

I. INTRODUCTION

In today's fast-paced world, one of the most important tools to protect innovation and creativity is copyright law. With technology's growth, methods of production, distribution and consumption of content have shifted and changed, which require constant change and a "legal" updating. Copyright law has changed significantly over time, from its initial form in traditional copyright law which sought protection for physical works to contemporary forms that consider online content and digital distribution².

The digital age, however, poses unique challenges that make copyright enforcement more complex. Gaps in existing structures have been uncovered by matters such as digital piracy, vague boundaries in interpretation about fair use, complex ownership in digital marketplaces, and difficulty in enforcement jurisdiction. Particularly emerging technologies like artificial intelligence (AI) and blockchain challenge preexisting frameworks of authorship and

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² Lyman Ray Patterson, Copyright in Historical Perspective, Vanderbilt Law Review.

ownership, thereby posing new threats to the effectiveness of copyright law.³

This article examines the evolution of copyright law in the context of digital technologies, highlights the challenges faced, and explores future perspectives for reform. By emphasizing international cooperation, technology-driven enforcement mechanisms, and innovative business models, this article advocates for a balanced and harmonious approach. The ultimate goal is to protect intellectual property while fostering digital creativity and accessibility in an ever-changing technological landscape.

II. EVOLUTION OF COPYRIGHT LAW

Traditional Copyright Frameworks: The origins of copyright law are deeply rooted in history, reflecting humanity's desire to safeguard intellectual creations. Early copyright frameworks were established to protect authors from unauthorized reproduction and distribution of their works. One of the foundational milestones was the **Statute of Anne (1710)** in England⁴, which is often regarded as the first modern copyright law. It granted authors exclusive rights to their works for a limited period, setting a precedent for balancing creators' rights with public access.

The core principles of traditional copyright laws included:

- **Exclusive Rights:** Creators were given control over how their works were used, reproduced, and distributed.
- **Economic Incentives:** By guaranteeing protection, copyright laws encouraged the creation of new works, fostering cultural enrichment and economic growth.
- **Time Limits:** The rights were granted for a specific duration, after which works entered the public domain, allowing broader access to creative content.

These frameworks were well-suited to the physical mediums of books, paintings, and music but were challenged by the technological revolutions that followed.

Shift to Modern Legal Approaches The advent of the digital era revolutionized the creation, distribution, and consumption of content. Digital platforms, online streaming, and global connectivity fundamentally transformed the creative landscape, exposing limitations in traditional copyright laws. To address these challenges, significant adaptations were made to the legal frameworks.

³ Dan Hunter, If You're a Hammer Everything Looks Like a Nail: Blockchain Solutions to Copyright Problems, *Cardozo L. Rev.*

⁴ Statute of Anne, 1710, 8 Ann., c. 19 (Eng.)

Key legislative milestones include:

- **Digital Millennium Copyright Act (DMCA):** Enacted in 1998 in the United States, the DMCA introduced provisions to protect digital content, addressed rights management systems, and established safe harbor rules for internet service providers.⁵
- **World Intellectual Property Organization (WIPO) Treaties:** The WIPO Internet Treaties (1996) addressed copyright and related rights in the online environment, promoting international cooperation.⁶
- **EU Copyright Directives:** The European Union adopted directives to harmonize copyright laws among member states, emphasizing the protection of digital works, combating online piracy, and clarifying fair use provisions.⁷

These modern approaches reflect the growing complexity of copyright in a digital world, where content can be distributed instantaneously and globally.

Need for Continuous Policy Reform: Despite these advancements, the rapid pace of technological innovation continues to outstrip legal adaptations. Emerging technologies such as artificial intelligence (AI), blockchain, and virtual reality introduce new questions about authorship, ownership, and enforcement. Digital piracy remains a persistent threat, while ambiguities in “fair use” interpretations complicate legal disputes.⁸

To remain effective, copyright laws must evolve in tandem with technological progress. Policymakers must adopt a proactive and dynamic approach, ensuring that laws are flexible enough to address new challenges while safeguarding the rights of creators.

The evolution of copyright law is an ongoing journey, one that underscores the importance of balancing protection with innovation and access. By embracing reform, we can pave the way for a fair and inclusive future in the digital age.

III. CHALLENGES IN DIGITAL ERA

The rapid expansion of digital technology has revolutionized the way content is created, distributed, and consumed. However, it has also introduced a multitude of challenges that threaten the efficacy of traditional copyright frameworks. Below, these challenges are explored

⁵ Digital Millennium Copyright Act, 17 U.S.C. § 512 (1998)

⁶ World Intellectual Property Organization, WIPO Copyright Treaty, Dec. 20, 1996, S. Treaty Doc. No. 105-17

⁷ Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the Harmonisation of Certain Aspects of Copyright and Related Rights in the Information Society, 2001 O.J. (L 167) 10

⁸ Pamela Samuelson, *Challenges for Copyright in the Digital Age*, 29 Berkeley Tech. L.J. 1 (2014)

in depth, highlighting their complexities and far-reaching implications.⁹

(A) Digital Piracy and Unauthorized use

Digital piracy remains one of the most pervasive threats to copyright protection. The ease with which content can be replicated and distributed in the digital realm has undermined the traditional safeguards of intellectual property. Streaming platforms, torrenting websites, and file-sharing networks have made movies, music, books, and software widely available without authorization. Some major challenges include:

- **Accessibility of Pirated Content:** A single unauthorized upload on a platform can result in millions of downloads globally within hours, causing substantial financial losses to creators and industries.
- **Inadequate Enforcement Mechanisms:** Despite efforts to combat piracy through takedown notices and lawsuits, the sheer volume and speed of unauthorized distribution make enforcement difficult.
- **Consumer Behavior:** Many users opt for pirated content due to its free availability, exacerbating the economic strain on legitimate content creators and distributors.

The global scale of digital piracy highlights the urgent need for innovative enforcement strategies and education campaigns to promote legal content consumption.¹⁰

(B) Fair use and Legal ambiguities

The doctrine of fair use¹¹ allows for the limited use of copyrighted materials without permission, typically for purposes like education, criticism, and parody. However, the digital era has added layers of complexity to interpreting fair use, particularly in a global context:

- **Varying Legal Interpretations:** The definition of fair use differs significantly across jurisdictions. For example, what qualifies as fair use in the United States¹² might not be legally permissible in the European Union¹³ or Asia.
- **Challenges with Transformative Works:** Digital platforms often host transformative content, such as mashups, memes, and commentary videos, which exist in a gray area of fair use. Determining whether such works infringe on copyright often requires

⁹ Debojyoti Chakraborty, *Copyright Challenges in the Digital Age: Balancing Intellectual Property Rights and Data Privacy in India's Online Ecosystem*, SSRN (2023)

¹⁰ Prasanna S. & Lavanya P., *Digital Piracy and Copyright Enforcement*, ILE Intellectual Property and Corporate Law Review, 2(1) (2023)

¹¹ Pamela Samuelson, *Unbundling Fair Uses*, 77 Fordham L. Rev. 2537 (2009)

¹² 17 U.S.C. § 107 (2018)

¹³ European Union Directive 2001/29/EC, 2001 O.J. (L 167) 10

subjective analysis, leading to legal disputes.

- **Impact on Creative Freedom:** Uncertainty around fair use deters creators from producing new works that reinterpret or build upon existing content, potentially stifling creativity.

Addressing these ambiguities is crucial to ensuring that fair use continues to support both creators and consumers in the digital age.

(C) Ownership in digital marketplace

The rise of digital marketplaces has blurred the lines between ownership and licensing. Unlike physical media, digital products are often sold under restrictive licensing agreements, raising questions about consumer rights and long-term access:

- **Licensing Over Ownership:** When purchasing digital books, music, or software, consumers are often granted limited rights to use the product rather than full ownership. This can lead to restrictions on sharing, reselling, or even accessing the content after specific terms expire.¹⁴
- **Impact of NFTs:** Non-fungible tokens (NFTs) have introduced new complexities to the concept of ownership in the digital realm. While NFTs may confer ownership of a unique digital item, they often do not grant rights to the underlying intellectual property. This disconnect can cause confusion about what consumers actually “own” when purchasing an NFT.¹⁵
- **Transparency Issues:** Many consumers are unaware of the limitations associated with digital purchases, highlighting the need for greater transparency in licensing agreement.¹⁶

(D) Jurisdiction and Enforcement Issue

The global nature of the internet poses significant challenges to enforcing copyright laws. When violations occur across borders, creators, platforms, and policymakers face numerous hurdles:¹⁷

- **Differing Legal Standards:** Each country enforces its own copyright laws, which often vary significantly. This patchwork of regulations complicates international enforcement

¹⁴ Aaron Perzanowski & Jason Schultz, *The End of Ownership: Personal Property in the Digital Economy* (2016)

¹⁵ Shradha Patel & Aashi Singh Bhadouria, *Decentralizing Digital Ownership: Exploring NFT Marketplaces and Blockchain Integration*, Int'l J. of Creative Research Thoughts (2024)

¹⁶ World Intellectual Property Organization, *Guide to Intellectual Property Issues in Digital Markets* (2020)

¹⁷ World Intellectual Property Organization, *Guide to the Berne Convention for the Protection of Literary and Artistic Works* (1978)

efforts.

- **Limited Jurisdictional Reach:** Copyright holders often struggle to take action against infringers operating in foreign jurisdictions, as legal remedies may not be available or practical.
- **Scalability of Enforcement:** With millions of digital transactions occurring daily, monitoring and prosecuting violations across borders is an immense task.¹⁸

(E) Emerging technological threats

1. **Artificial Intelligence (AI)** AI has transformed creative processes, enabling the generation of text, music, art, and even video. While this offers exciting opportunities, it also raises profound copyright questions:

- **Authorship and Ownership:** Can AI systems be considered authors, and if not, who owns the rights to AI-generated content the developer, the user, or another party?
- **Impact on Human Creators:** The proliferation of AI-generated works may devalue human creativity, as automated systems can produce content at a fraction of the time and cost.¹⁹

2. **Blockchain Technology:** Blockchain has the potential to revolutionize copyright protection through transparent and immutable records of ownership. However, it also presents challenges:²⁰

- **Decentralized Platforms:** Blockchain-based systems can be difficult to regulate, as they operate outside traditional legal frameworks.
- **Rights Management:** While blockchain can track ownership, it does not inherently resolve disputes over unauthorized use or infringement.²¹

Both AI and blockchain illustrate the need for innovative legal approaches to address the unique challenges posed by emerging technologies.

¹⁸ Magdalena Knapp, *The Scope of Jurisdiction in Cross-Border Intellectual Property Disputes: Tackling Online Copyright Infringements*, Białostockie Studia Prawnicze, vol. 27, no. 1 (2022)

¹⁹ Hafiz Gaffar & Saleh Albarashdi, *Copyright Protection for AI-Generated Works: Exploring Originality and Ownership in a Digital Landscape*, Asian J. Int'l L., vol. 15, no. 1 (2025)

²⁰ Balázs Bodó et al., *Blockchain and Smart Contracts: The Missing Link in Copyright Licensing?*, Int'l J.L. & Info. Tech., vol. 26, no. 4 (2018)

²¹ Blockchain Research Institute, *Blockchain and Intellectual Property: A New Paradigm for Copyright Protection* (2020)

IV. FUTURE PERSPECTIVE AND SOLUTIONS FOR COPYRIGHT IN THE DIGITAL ERA

The global nature of the internet makes it imperative to establish unified copyright frameworks. The absence of harmonized laws often creates confusion and enforcement challenges, particularly when violations cross borders. A cohesive international approach can address these gaps and ensure consistent protection for creators worldwide.²²

Efforts toward harmonization might include:

- **Global Treaties and Standards:** Expanding initiatives like the WIPO Internet Treaties to create broader consensus on copyright definitions, fair use, and infringement penalties.
- **Bilateral and Multilateral Agreements:** Encouraging countries to collaborate on enforcing cross-border copyright violations.
- **Collective Enforcement Mechanisms:** Setting up international task forces to manage and adjudicate global copyright disputes.²³

(A) Technology-Driven Enforcement

Advances in technology offer powerful tools to monitor and enforce copyright laws more effectively. By leveraging artificial intelligence (AI) and automation, copyright enforcement can become faster, more accurate, and less resource-intensive.²⁴

Key solutions include:

- **AI-Based Monitoring:** Intelligent algorithms can scan digital platforms to identify and flag copyrighted content. Tools like content recognition systems already help platforms like YouTube detect and manage copyrighted material.
- **Automated Copyright Management:** Digital rights management systems powered by blockchain or other advanced technologies can streamline the process of tracking ownership and ensuring compliance.
- **Proactive Detection Tools:** Real-time monitoring systems can identify infringements as they occur, enabling faster takedown actions.

²² World Intellectual Property Organization, *WIPO Copyright Treaty*, Dec. 20, 1996, S. Treaty Doc. No. 105-17

²³ Magdalena Knapp, *The Scope of Jurisdiction in Cross-Border Intellectual Property Disputes: Tackling Online Copyright Infringements*, Białostockie Studia Prawnicze, vol. 27, no. 1 (2022)

²⁴ Blockchain Research Institute, *Blockchain and Intellectual Property: A New Paradigm for Copyright Protection* (2020)

(B) New Business Models

New business models have arisen to adjust to consumer behavior and market needs as conventional approaches to monetizing creative works are being disrupted. These approaches place a high value on justice, adaptability, and accessibility for both audiences and creators..²⁵

Examples include:

- **Subscription Services:** Platforms like Spotify, Netflix, and Adobe Creative Cloud offer content and tools on a subscription basis, making them accessible to a wide audience while providing consistent revenue for creators.
- **Freemium Models:** These are frequently used in apps and games, which charge for in-app purchases or premium features but provide basic services for free.
- **Micro-Licensing:** This promotes the lawful use of content by allowing creative works to be licensed for particular uses at reasonable prices. Small producers and companies looking for affordable, high-quality materials may find this strategy especially helpful.

(C) Balancing Protection and Access

Copyright's survival depends on striking a careful balance between defending the rights of creators and promoting innovation and creativity in the digital sphere. Lax enforcement can harm the creative sector, while too restrictive laws can hinder innovation. Adaptive frameworks that emphasize inclusivity and flexibility must be adopted by policymakers.

Suggestions include:

- **Encouraging Open Access:** Making educational and scientific resources freely available to foster knowledge sharing and development.
- **Reasonable Copyright Terms:** Ensuring that copyright durations are not excessively long, allowing works to enter the public domain sooner to benefit society as a whole.
- **Digital Creativity Incentives:** Supporting creators with grants, tax breaks, or public funding to encourage innovation in digital art, music, and storytelling.

V. HARMONIZING PROTECTION AND CREATIVITY

(A) A Balanced Approach to Copyright

An era of previously unheard-of creative potential has been brought about by the digital revolution and the quick advances in technology. But these potential also bring with them the

²⁵ Nicola Searle, *Business Models and Copyright Reform: The Legal Business Model*, Goldsmiths, University of London (2020)

crucial problem of striking a balance between copyright protection and creative work accessibility. In order to compensate creators for their work and to promote an atmosphere that encourages innovation and creativity, intellectual property rights must be protected. This section explores stakeholder viewpoints, emphasizes the value of cooperation, and explores techniques for striking a balance between these goals.

(B) A balance: Protecting property and encouraging accessibility

Protecting creators' rights while maintaining equal and reasonably priced access to creative work is the main conflict in copyright law. For authors, singers, filmmakers, and other creative's to be inspired to devote time and resources to their work, intellectual property protection is essential. Without protection, the value of their creations could be diminished by the possibility of piracy and unjust exploitation..

However, overly rigid copyright restrictions can stifle innovation. For instance, excessive licensing costs or restrictive terms may prevent remix artists, educators, and nonprofit organizations from utilizing works that could inspire new creativity or provide societal benefits. Accessibility ensures that knowledge, culture, and ideas are shared broadly, encouraging the growth of diverse and inclusive digital ecosystems. A balanced approach acknowledges that creators and consumers are interconnected. Access to creative works should be complemented by fair compensation mechanisms for creators, ensuring that both parties benefit from the exchange.²⁶

(C) Strategies for fostering creativity in copyright protected environment

- **Flexible Licensing Models:** Creative Commons licenses exemplify how flexibility can foster creativity. By allowing creators to define the terms of use for their works such as permitting non-commercial usage or adaptations -Creative Commons promotes sharing while retaining intellectual property rights.
- **Encouragement for Public Domain:** By offering a wealth of material for new inventions, increasing access to public domain works fosters creativity. Inspiring artists, authors, and academics, public domain items promote creativity without violating copyright.
- **Encouraging Fair Use:** Publicly available and well-defined fair use policies are essential. By offering instructions and learning resources, creators can better understand

²⁶ Lawrence Lessig, *Free Culture: How Big Media Uses Technology and the Law to Lock Down Culture and Control Creativity* (2004)

these rules and avoid needless legal issues.

- **Adopting New Business Models:** Subscription-based models, pay-per-use systems, and micro transactions can balance accessibility with revenue generation. Platforms like Spotify and Netflix have successfully adopted subscription systems, providing affordable access to consumers while compensating creators.
- **Education and Awareness Campaigns:** Educating both creators and consumers about copyright laws fosters a culture of respect for intellectual property. Awareness campaigns can emphasize the importance of purchasing and licensing content legally, empowering creators and protecting their rights.²⁷

(D) Perspectives from Stakeholders

Effective copyright policy requires input from diverse stakeholders who are integral to the creative ecosystem:

- **Creators:** For creators, copyright protection is essential for safeguarding the fruits of their labor. However, they often seek greater control over how their works are distributed, ensuring fair compensation while allowing visibility. Many creators advocate for simplified licensing systems and tools that support self-publishing.
- **Digital Platforms:** Platforms like YouTube, Spotify, and Amazon play a pivotal role in copyright enforcement. They often act as intermediaries, negotiating between creators and consumers. These platforms face challenges in implementing automated copyright detection systems while maintaining flexibility for legitimate uses like parody and remixing.²⁸
- **Consumers:** Consumers value affordable and user-friendly access to creative works. The rise of digital piracy has highlighted a gap between demand and legal access. Empowering consumers with better tools for affordable legal access can mitigate the appeal of piracy.
- **Government and Legal Authorities:** Governments serve as policymakers and enforcers of copyright laws. However, they must address the challenges of jurisdictional enforcement and rapidly evolving technologies, ensuring laws remain relevant and effective.

²⁷ World Intellectual Property Organization, *Guide to Intellectual Property Issues in Digital Markets* (2020)

²⁸ Creative Commons, *About Us*, available at [CreativeCommons.org](https://creativecommons.org)

(E) Collaboration

Governments, creative communities, and industries must work together to address copyright issues. Stakeholders can create creative solutions that balance the interests of all parties by cooperating. The following are important areas where cooperation can lead to success:

- **Lawmakers and Technologists:** Policymakers must work closely with technologists to address emerging challenges like AI-generated content and blockchain-based marketplaces. For example, laws that clarify ownership of AI-generated works can reduce ambiguity and foster innovation.
- **Platforms and Creators:** Revenue-sharing can be made more transparent and equitable by platforms that encourage direct collaboration with creators. Fair remuneration and control can be supported by tools that let creators keep an eye on how their work is utilized, such as YouTube's Content ID.
- **Case Studies of Successful Initiatives:**
 - *Creative Commons:* This initiative has provided creators with tools to share their work on their own terms, promoting collaboration and creative reuse while retaining intellectual property rights.²⁹
 - *The Berne Convention:* International treaties like this have standardized copyright protection across borders, ensuring that creators receive recognition and protection globally.³⁰
 - *Spotify and Netflix:* By offering legal, affordable access to content, these platforms have reduced piracy rates and created sustainable revenue streams for creators.

(F) Recommendations for a Balanced Approach

Policy makers and interested parties should take into account the following suggestions in order to strike a balance between copyright protection and digital creativity:

- **Unified Global Framework:** Difficulties with Jurisdictional enforcement can be resolved by establishing a uniform international copyright framework. International cooperation can be facilitated by institutions such as the world Intellectual Property organization (WIPO)
- **Adopt Emerging Technologies:** Blockchain and AI can improve copyright protection.

²⁹ Creative Commons, *About Us*, available at [CreativeCommons.org](https://creativecommons.org)

³⁰ The Berne Convention for the Protection of Literary and Artistic Works, Sept. 9, 1886, as revised, S. Treaty Doc. No. 99-27

For instance, AI techniques can successfully detect piracy and enforce copyrights, while blockchain can provide transparent licensing and payment systems

- **Stakeholder Engagement:** Ongoing dialogue among creators, platforms, and policymakers ensures that copyright frameworks remain adaptive to technological advancements.
- **Promote Accessibility:** Initiatives like fair pricing models, public domain expansion, and flexible licensing empower consumers while respecting intellectual property.
- **Education and Advocacy:** Awareness campaigns can educate creators about their rights and responsibilities while promoting ethical consumption among audiences.

VI. CONCLUSION

The legislation affiliated with copyright in this period of rapid innovation is in a critical phase, requiring constant evolution to meet ongoing challenges while exploring new possibilities. With rapid technological growth, traditional concepts of copyright are increasingly challenged by digital piracy, territorial enforcement issues, complicated ownership structures, and disputes on fair use versus ownership. New forms of artificial intelligence and blockchain also pose threats, but they are equally promising for enabling and administering rights. To navigate these intertwined difficulties adequately, there is a need for a unified framework that controls international relations and facilitates collective action on these issues. This requires expanding international treaties and their legal frameworks while promoting inter-state collaboration. Technologies for enforcement, like AI surveillance and block-chain digital rights management systems, have the capacity to transform the protection of intellectual property, enabling timely and effective action.

Adapting to the needs of the digital world requires embracing more flexible, forward-thinking business models along with formalistic structures. Subscription-based, freemium, and micro-licensing are very pragmatic, yet novel approaches to content monetization that ensure access remains open. Promoting creativity and access requires the broadening of public domains while enabling open access and fair use. Striking a balance between defending a creator's rights after spending resources to create intellectual property and facilitating the fair sharing of knowledge and culture is a challenge of the future copyright law. Placing collaboration among stakeholders alongside emerging technologies encourages adaptable policy frameworks where creativity, culture, and innovation can thrive.
