FAIR USE IN THE DIGITAL AGE: ADAPTING TRADITIONAL COPYRIGHT EXCEPTIONS FOR EMERGING TECHNOLOGIES

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ABSTRACT

The digital revolution has greatly disoriented conventional paradigms of copyright law, presenting new challenges to the doctrine of fair use. In this research, it is explored how new technologies specifically Artificial Intelligence (AI), blockchain, and algorithmic content moderation have changed the interpretation, application, and enforcement of fair use in the 21st century. With AI systems learning from large datasets of copyrighted content, blockchain-based smart contracts facilitating automated licensing, and sites such as YouTube applying algorithmic filters for enforcing content, fair use has become an increasingly contested and uncertain legal landscape. This research critically examines the extent to which current legal structures are adaptive enough to accommodate these changes and examines legal and policy suggestions for recalibrating copyright protection in the face of changing technological realities.

Utilizing a doctrinal and comparative approach, the study examines seminal judicial precedents such as Authors Guild v. Google, Andy Warhol Foundation v. Goldsmith, and Andersen v. Stability AI, and recent legislative activity such as the EU's DSM Directive and the U.S. DMCA. It recognizes systemic barriers like overreliance on automated enforcement mechanisms, the law's uncertainty about AI-generated content, blockchain's rigidity in assessing contextual fair use claims, and economic incentives that bias platform liability towards rightsholders. These issues have a chilling effect on creativity, disproportionately hurting educators, critics, and remix artists whose work builds upon transformative and public interest-based use.

The study concludes by suggesting a multi-faceted reform agenda that involves optimizing automated enforcement mechanisms, integrating fair use exceptions in blockchain and smart contract architecture, setting international standards for training AI and attribution of content, and strengthening user rights through legal presumptions as well as effective dispute resolution mechanisms. Finally, the study contends that protecting

fair use in the digital age is necessary not only as a copyright exception but as a building block of innovation, free expression, and public access to information. Accordingly, it recommends a legal system that is both technologically adaptive and normatively dedicated to the values in which copyright law is rooted.

LIST OF STATUTES

Digital Millennium Copyright Act 1998

EU AI Act 2024, DSM Directive 2019

LIST OF CASES

Andersen v. Stability AI

Andy Warhol Foundation v. Goldsmith

Authors Guild v. Google

Hermes Int'l v. Rothschild

The New York Times v. OpenAI

U.S. Copyright Office, Zarya of the Dawn

LIST OF ABBREVIATIONS

AI	Artificial Intelligence
DMCA	Digital Millennium Copyright Act
DSM	Digital Single Market
EU	European Union
ID	Identity
ML	Machine Learning
NYT	New York Times

TDM	Time Division Multiplexing
UK	United Kingdom
US	United States

CHAPTER I

INTRODUCTION

Copyright law, crafted to safeguard creators' rights, faces unprecedented challenges in the digital age. Emerging technologies like AI, blockchain, and the metaverse blur lines of creation, dissemination, and consumption of copyrighted material. The traditional copyright exceptions, particularly fair use, that developed in the pre-digital era, find it challenging to respond to such new realities. Fair use, the doctrine allowing the limited use of copyrighted material without permission from the rights holder, is a doctrine that will facilitate innovation, education, and free expression. The paper delves into whether current fair use provisions are sufficient for these new technological developments and seeks to understand adaptations that could help it stay current and useful. The balance between creators' rights and universal access to information and innovation forms the crux of this investigation.

1.1. STATEMENT OF PROBLEM

The rapid advancements in digital technologies have significantly blurred the boundaries of fair use and presented several legal and policy challenges. Courts find it increasingly hard to define transformative use, particularly in cases of AI-generated content, deep learning models, and digital remixes, which is resulting in inconsistencies in judicial interpretation. Apart from this, with the emergence of automated copyright enforcement mechanisms, including YouTube's Content ID and the DMCA takedown system, the legitimate claims of fair use are often stifled, further restricting creativity and access to information. In fact, legislative structures have not matched the pace of technological development. This has meant that there have been critical lacunae within copyright laws about AI training, TDM, and digital archiving. This lack of adaptation creates legal uncertainties and deters innovation. Global disparities also create differences between the fair use doctrines of jurisdictions—such as those between the U.S. fair use system and the fair dealing frameworks within the UK, Canada, or Australia—that cross-border digital content regulation must work with. These challenges require

comprehensive analysis of the fair use of the digital age to identify the legal and policy solutions that guarantee its continued relevance in balancing copyright protection with technological progress.

1.2.OBJECTIVES OF STUDY

i. To examine the scope, impact and application of emerging technologies on fair use.

ii. To evaluate the role of Artificial Intelligence, Blockchain, and other digital platforms in reshaping copyright exceptions.

iii. To analyse key legal precedents and policy developments related to digital fair use.

iv. To identify challenges in balancing fair use with copyright enforcement in digital framework and proposing recommendations in adapting fair use to emerging technologies.

1.3.RESEARCH HYPOTHESES

i. The rise of AI, blockchain, and digital platforms has fundamentally changed the nature and the application of fair use, and hence, legal frameworks must adapt.

ii. Current Copyright laws and enforcing mechanisms do not adequately address emerging technologies, therefore, there would be inconsistencies regarding the interpretation of fair use.

iii. Judicial precedents and policy developments have been unable to keep pace with the digital revolution, which has created uncertainty in fair use exceptions.

iv. Balancing fair use can be realized through legal and policy reforms that would accommodate emerging technologies while protecting copyright holders' rights.

1.4. RESEARCH QUESTIONS

i. How do emerging technologies affect the scope, interpretation, and application of fair use?

ii. What role do AI, blockchain, and digital platforms play in redefining copyright exceptions?

iii. How have courts and policymakers responded to the changing requirements of fair use in the electronic environment?

iv. What are the primary obstacles in balancing fair use with copyright enforcement in digital frameworks and what legal and policy recommendations can be proposed to ensure fair use remains effective and adaptable in the digital era?

1.5. RATIONALE OF THE STUDY

Relying increasingly on digital technologies to create content, analyse data, and share information raises serious complexities of copyright in those instances. For instance, fair use principles developed in a pre-digital world cannot easily fit AI-generated works, text and data mining, and other decentralized digital assets. Moreover, mechanisms of automatic copyright enforcement usually stifle legitimate fair use claims, limiting access to knowledge and innovation. This study is crucial to understand how fair use can be adapted to the digital age while ensuring a fair balance between copyright protection and technological progress. By analysing legal precedents, policy trends, and technological developments, this research aims to contribute to the ongoing debate on modernizing copyright law for the digital future.

1.6. RESEARCH METHODOLOGY

This study adopts an interpretative and critical research paradigm, as it seeks to analyse and interpret fair use principles in the context of emerging technologies while critically evaluating gaps in current copyright laws and enforcement mechanisms. The research follows an exploratory, descriptive, and explanatory design, as it investigates new technological challenges, describes legal frameworks and policy developments, and explains how AI, blockchain, and digital platforms are reshaping fair use. The research study is cross-sectional, meaning a focus on fair use in the current electronic setting rather than tracking changes over time. The study is based on an alternative hypothesis: therefore, that fair use has to change with digital technologies, and that copyright laws themselves are ineffective in addressing these issues. The hypotheses are stated in declarative and directional form: emerging technologies affect fair use and therefore should be accompanied by changes in the law. The study uses qualitative data that primarily consists of legal cases, statutes, policy papers, and scholarly discussions. The meta-analysis of legal frameworks and case study method are applied to investigate important judicial decisions and policy developments in the area of fair use in the digital age. The research hence follows inductive and deductive reasoning approaches: it uses inductive reasoning to draw insights from case law, policy discussions, and technological trends, and deductive reasoning in testing hypotheses by applying legal principles to the

emerging digital contexts. Units of analysis include national and international legal issues, comparing the fairly used fairness from across jurisdictions such as the U.S and EU. This methodological framework ensures a comprehensive evaluation of fair use in the digital age, offering insights into legal adaptations required to balance copyright protection with technological advancements.

1.7. REVIEW OF LITERATURE

i. De Filippi, P., & Wright, A. Blockchain and the Law: The Rule of Code.

Analyzes blockchain decentralized governance posing questions to traditional legal frameworks, including copyright. Demonstrates "code as law" tensioning more flexible doctrines, such as fair use, with smart contract instantiation.

ii. Mik, E. Smart Contracts: Terminology, Technical Limitations, and Real-World Complexity

Destruction of myth for what can or cannot be achieved with smart contracts, displaying impossibility for sophisticated legal norms, such as determining fair use due to computation-based rigidity. Suggests hybrid human-AI review structures.

iii. Bridy, A., Copyright's Digital Deputies: DMCA-Plus Enforcement by Internet Platforms

Documents how platforms go beyond DMCA mandates with algorithmic enforcement (e.g., ContentID), generating "shadow copyright regimes" that are disproportionately damaging to fair use through false positives.

iv. Urban, J., et al., Notice and Takedown in Everyday Practice

Empirical research disclosing systemic over-removal of legal content as a result of automated takedown systems. Demonstrates 30% of claims are against potential fair uses, with just 0.5% of users counter-noticing.

v. Samuelson, P., Generative AI and Copyright Law

Examines three central AI copyright issues: legality of training data (supports fair use), originality of output (little human authorship necessary), and standards of infringement (suggests "substantial similarity+" test).

vi. Chohan, R., Non-Fungible Tokens: Blockchains, Scarcity, and Value

Examines the ways in which NFTs monetize digital art and generate new copyright tensions. Observes that most NFT sites disregard fair use, automatically banning derivative works irrespective of legality.

vii. Husovec, M., The New EU Copyright Law: How the Copyright Directive Will Reshape the Internet

Criticizes Article 17's upload filters as inherently incompatible with fair use's case-by-case approach. Forecasts over-blocking of memes, parodies, and educational content.

viii. Suzor, N., Lawless: The Secret Rules That Govern Our Digital Lives, Cambridge University Press

Reveals how platforms' internal copyright enforcement policies (e.g., YouTube's three-strikes) regularly trump statutory fair use protections via impenetrable algorithms.

ix. Boyle, J., The Public Domain: Enclosing the Commons of the Mind Press

Groundbreaking work contending maximalist copyright expansion imperils creativity. Suggests "fair use harbors" for education and research as necessary counterbalance.

x. Lessig, L., Remix: Making Art and Commerce Thrive in the Hybrid Economy

Champions remix culture as 21st-century creativity, demonstrating how contemporary copyright regimes criminalize transformative works. Calls for "amateur fair use" exemptions.

1.8.SCOPE AND LIMITATIONS OF THE STUDY

This research discusses the effect of emerging technologies such as AI, blockchain, and digital platforms on fair use and copyright exceptions. It studies the judicial precedents, legislative development, and policy discussions in significant jurisdictions like the U.S., EU to see how fair use is changing due to digital development. In addition, the study examines enforcement mechanisms like the DMCA, content filtering systems, and automated copyright detection

technologies to understand their influence on the interpretation and application of fair use. However, the study has certain limitations. It is primarily doctrinal in nature, relying on legal analysis rather than empirical data collection, which may limit its ability to assess real-world enforcement trends comprehensively. It also does not reach into the other areas of intellectual property laws, like trademark or patent areas, because there is a concern only with regard to copyright law and fair use. Although research takes into consideration the international approaches, it cannot cover all jurisdiction areas and sometimes cannot be even as comprehensive at the global scale of fair use adaptations.

CHAPTER II

The emergence of artificial intelligence (AI), blockchain, and algorithmic content moderation has revolutionized the legal and creative landscape of copyright law and fair use doctrine at its core. These new technologies have brought unprecedented opportunities for content creation, dissemination, and enforcement while raising difficult legal and ethical issues regarding ownership, infringement, and the changing contours of fair use. As increasingly more text, pictures, and music are created by AI systems, often trained on massive databases of copyrighted work, courts and scholars struggle with whether the use is fair or infringing. Blockchain technology, which enables decentralized tracking of ownership and enforcement of smart contracts, holds both promise and complications for the management of copyright, most notably in licensing and paying royalties. At the same time, automated content moderation technologies utilized by online platforms have difficulty accurately separating infringing content from lawful fair use and tend to over-enforce in favor of, and inadvertently censor, legitimate creative works. The swift adoption of these technologies revealed loopholes within current copyright paradigms that were formulated before the digital environment and are unable to keep pace with the dynamics of technological evolution.

Legal frameworks across the globe are being pushed by the test cases of whether training AI constitutes fair use, whether algorithmic enforcement is an infringement on users' rights, and how blockchain technology can be used to enable—instead of thwart—copyright exceptions. Academic discussion continues to be polarized, with some claiming the technologies enable extended access and transformative use of material, and others cautioning about the risks of their ability to consolidate control and stifle fair use rights. This tension highlights the imperative for a thoughtful reconsideration of copyright law—one that weighs the protection

of intellectual property against the encouragement of innovation, free expression, and the public interest in accessing and drawing upon creative works. This article surveys the complex effect of new technologies on fair use, discussing major legal cases, policy trends, and technological developments that are transforming copyright enforcement and exceptions. Considering the challenges and prospects of AI, blockchain, and digital platforms, this research seeks to contribute to the debate on how copyright law can adapt to the needs of the digital era while maintaining the core values of fair use.

2.1 AI AND MACHINE LEARNING: COPYRIGHT DILEMMAS IN TRAINING AND OUTPUT

Artificial intelligence (AI) and machine learning (ML) have transformed content creation, data analysis, and creative economy, but their use of copyrighted content for training has sparked tremendous legal controversy. One of the key controversies is whether using copyrighted works to train AI models constitutes fair use of copyright law or whether it results in infringement. High-profile cases, like Andersen v. Stability AI[1], bear out this tension. In the case, copyright holders and artists sued Stability AI, Midjourney, and DeviantArt for using copyrighted images to train their generative AI models without authorization, allowing the AI to generate outputs that compete with or derive from the original work. The case turns on whether AI training, where one ingests huge amounts of datasets to learn patterns instead of literally recreating works, constitutes a transformative fair use in U.S. law.

Fair Use and AI Training: A Transformative Use or Infringement?

Supporters of AI creation contend that the use of training models on copyrighted material is transformative because the AI does not copy works but instead examines them to create new, non-similar outputs. Scholars argue that this process is consistent with fair use standards, especially where AI applications are used for research, education, or innovation purposes instead of straightforward commercial duplication. This view finds precedent in cases such as Authors Guild v. Google[2], in which the Second Circuit held that Google's mass digitization of books for search purposes constituted fair use because it offered a "transformative" public good without replacing the original market for the works.

[1] Andersen v. Stability AI, 700 F. Supp. 3d 853 (N.D. Cal.) 2023.
[2] Authors Guild v. Google , 804 F.3d 202 (2d Cir. 2015)

Critics respond that AI models, especially generative models such as Stable Diffusion and ChatGPT, memorize and reproduce copyrighted material in ways that could infringe on copyright. Cases such as The New York Times v. OpenAI[3] (pending, 2024) highlight this concern, where OpenAI's ChatGPT allegedly reproduced substantial portions of NYT articles, raising questions about whether AI outputs function as derivative works that undermine the market for original content. If courts determine that AI-generated content is too similar to protected material, it would undermine the fair use defense for AI training, compelling companies to obtain licenses or risk lawsuits.

Copyrightability of AI-Generated Works

Aside from training, another legal grey area is whether AI-generated content can be copyrighted. The U.S. Copyright Office and the EU hold that protection under copyright calls for human authorship, a position exemplified in the case of Zarya of the Dawn[4], where copyright registration was cancelled for an AI-generated comic book. Likewise, EU copyright legislation (Article 4 of the DSM Directive)[5] places emphasis on human creative work as a basis for protection. This approach puts AI creations in a juridical ambiguity—neither covered by copyright nor possibly bounded if they emulate other protected works too closely.

Judicial and Legislative Uncertainty

Judges around the world are having a difficult time imposing traditional fair use principles on AI. Although there are some favorable decisions (HathiTrust, 2014) allowing broad-scale data processing for research, there are others (Andy Warhol Foundation v. Goldsmith, 2023[6]) which construe transformative use more narrowly, making the legal status of AI more challenging. Legislatively, the EU's AI Act mandates transparency in training data, while U.S. proposals like the NO FAKES Act (2023) seek to regulate AI-generated replicas of human voices and likenesses. These developments suggest a growing regulatory focus on AI's copyright implications but leave key fair use questions unresolved.

[3] The New York Times v. OpenAI, 1:23-cv-11195, 2024.
[4] U.S. Copyright Office, *Zarya of the Dawn* (2023)
[5] EU AI Act (2024), DSM Directive (2019)
[6] Andy Warhol Foundation v. Goldsmith, 598 U.S. 508, 2023.

A Need for Legal Clarity

The fast pace of AI development calls for revised legal systems that weigh innovation against copyright protection. While AI training can be accommodated by fair use in certain situations, the threat of market damage and unauthorized copying necessitates more defined judicial standards. Future policy needs to consider:

Standardizing fair use for AI training—Is non-expressive data mining always acceptable?

Regulating AI outputs—How close can AI-created content be before it violates?

Human-AI collaboration—What degree of human input warrants copyright protection?

As cases such as Andersen and NYT v. OpenAI move forward, courts will be at the center of establishing the limits of AI and fair use, determining the future of copyright law and technological advancement.

2.2 BLOCKCHAIN AND SMART CONTRACTS

Blockchain[7] technology has been a potential solution for the revolution of copyright enforcement and fair use licensing via its decentralized and tamper-resistant ledger system. Through its immutable record of ownership and transactions, blockchain allows creators to create verifiable proof of authorship and monitor the usage of their intellectual property in real time. One of the most important innovations in this area is the application of smart contracts[8]—self-executing contracts written into blockchain networks—that can automate licensing, so that creators get paid royalties every time their works are utilized under pre-agreed terms. This automation eliminates dependence on intermediaries like publishers or collecting societies, making royalty payment more efficient while enhancing transparency. In addition, Non-Fungible Tokens (NFTs)[9] have emerged as a vehicle for tokenizing intellectual property works in the form of digital certificates of authenticity that may be attached to distinctive assets. Such applications imply that blockchain may change the way copyright is managed by allowing peer-to-peer direct transactions with an auditable history of ownership and use. Nevertheless, even

[7] De Filippi, P., & Wright, A. *Blockchain and the Law: The Rule of Code.* Harvard University Press, 2018.
[8] Mik, E. Smart Contracts: Terminology, Technical Limitations, and Real-World Complexity. Law, Innovation and Technology*, 9*(2) 2017.
[9] Hermes Int'l v. Rothschild, No. 22-CV-384-JSR, 2023 WL 1458126 (S.D.N.Y. Feb. 2, 2023).

with these benefits, blockchain systems are subject to substantial legal and operational difficulties in aligning their strict, rule-based design with the adaptable, context-specific character of fair use doctrine. Perhaps the most urgent constraint on blockchain as a means of copyright enforcement is its inability to assess fair use dynamically.

Historical legal determinations of fair use demand a contextual analysis of the use purpose (e.g., education, parody, commentary), the work used, and possible market effect—considerations that are necessarily subjective and fact-bound. Blockchain networks, on the other hand, run on deterministic protocols that are incapable of mimicking the interpretive rationality of human courts or adjudicators. While blockchain is particularly adept at confirming ownership and implementing pre-agreed licensing conditions, it cannot evaluate whether a given usage would meet the definition of fair use under copyright law. To fill this shortcoming, researchers have suggested hybrid designs integrating blockchain with artificial intelligence (AI) to examine usage contexts and forecast fair use determinations. These systems might hypothetically make more advanced copyright policing automatic without compromising flexibility for lawful fair uses. But these solutions are still experimental, and their legality has not yet been tested in most legal systems. A further possible use of blockchain is in decentralized copyright enforcement, which could check the overreach of centralized content moderation systems such as YouTube's Content ID. Existing platforms tend towards over-blocking, incorrectly labelling legitimate fair use content—such as parodies, criticism, or educational content—because they're based on automated filters.

Blockchain-based substitutes might enable authors to enforce their rights without reliance on such middlemen. Smart contracts, for example, can be designed to acknowledge fair use exceptions or contain mechanisms for resolution of disputes in order to allow users to contest unjustified assertions without the interference of the platforms. Audius, a decentralized music streaming service, has pioneered such approaches through enabling artists to establish customizable terms of use as well as listeners to dispute abusive restrictions. Notwithstanding these advances, mass adoption is hindered by scalability issues, excessive transaction fees on certain blockchain platforms, and the absence of legal recourse to blockchain-based enforcement mechanisms. Decentralized systems have yet to be integrated into the copyright system of most jurisdictions, rendering their enforceability ambiguous. In summary, while blockchain and smart contracts represent strong benefits for the management of copyright—transparency, automation, and minimized reliance on intermediaries—the technology is not yet

the cure-all for fair use conflicts. The technology's inflexibility is at odds with the flexibility demanded by doctrine of fair use, and its present implementations fall short of emulating the subtlety of adjudication by legal systems. It will be necessary in the future to conduct additional research and develop regulations that narrow this gap.

Possible solutions are legislative changes acknowledging blockchain-based licensing, AI-powered fair use analysis software, and standardized protocols for decentralized dispute resolution. Until these developments occur, blockchain's contribution to copyright enforcement will be complementary instead of transformative, working alongside—instead of displacing—traditional legal structures.

2.3 ALGORITHMIC ENFORCEMENT AND DIGITAL PLATFORMS

Algorithmic copyright enforcement on digital platforms has dramatically changed the implementation of copyright law in the digital context, albeit at the cost of fair use protections. Large platforms like YouTube depend on automated tools like Content ID to identify and control copyrighted content, but these tools consistently over-block legitimate fair use materials such as educational analyses, critical reviews, and parodies. Empirical studies show that algorithmic enforcement does not have the contextual sensitivity required to determine fair use, causing the wrongful removal or demonetization of legal content. This problem arises from the reality that automated filters value efficiency over accuracy and thus have a high level of false positives that disproportionately harm creators who depend on fair use.

The spread of remix culture on websites such as TikTok makes it even more challenging to adjudicate fair use in the digital realm. Short-form video matter tends to include copyrighted music, cinematic clips, and other media in a manner that subverts classical concepts of derivative and transformative works. Remixing practices are stretching the limits of fair use, compelling courts and policymakers to reexamine the application of copyright law to user-generated content that reuses established works in new and socially useful ways. Nevertheless, the conflict between algorithmic enforcement and creative reuse persists unresolved, with many platforms resorting to restrictive copyright policies in order to shield themselves from legal risk—often to the detriment of innovation.

These advances point to a critical demand for technological and legal innovations that more closely harmonize automated enforcement with the principles of fair use. Possible solutions

are:

Enhanced algorithmic precision via machine learning algorithms trained on identifying fair use indicators (e.g., commentary, parody, educational purpose).

Human oversight protections against the wrongful removal of transformative works.

E Policy reform to the DMCA's safe harbors, ensuring platforms do not have a financial incentive to over-remove content.

Without such changes, the current system risks undermining free expression while failing to adapt to the evolving nature of digital creativity.

CHAPTER III

3.1 THE PRIMARY OBSTACLES IN BALANCING FAIR USE WITH COPYRIGHT ENFORCEMENT IN DIGITAL FRAMEWORK

1. Excessive Dependence on Automated Enforcement Tools

The growing reliance of online platforms on AI-based content moderation tools poses serious challenges to protections of fair use. Tools such as YouTube's Content ID and Facebook's Rights Manager often mistakenly flag legitimate fair use content - including parodies, critical analysis, and educational content - as copyright infringement. This happens mainly due to these automated systems not having the subtle level of understanding needed to determine contextual factors such as transformative use or satire intention[10]. In addition, platforms have an inherent algorithmic bias against rightsholders, automatically erring in favor of takedowns to limit their legal liability, which leads to massive overblocking of legal content[11]. The issue pervades scholarly domains as well, with plagiarism detection software such as Turnitin tending to produce false positives by indicating well-cited academic work as possibly plagiarized, having a chilling effect on bona fide research and scholarship.

[10] Bridy, A., Copyright's Digital Deputies: DMCA-Plus Enforcement by Internet Platforms (2020).
[11] Urban, J., et al., Notice and Takedown in Everyday Practice, 2017.

2. Legal Ambiguity Surrounding AI and Fair Use

The recent evolution of artificial intelligence technologies has generated huge legal uncertainties with regard to fair use uses. Courts are profoundly split on whether or not it is fair use to employ copyrighted content to train AI systems, with opposing precedents arising out of cases such as Authors Guild v. Google[12] and subsequent lawsuits contesting the practice. Added to this ambiguity are open issues regarding liability in the event of AI systems producing outputs that look like protected works - should accountability rest with developers, end-users, or AI systems themselves?[13]. These challenges are compounded by the absence of global consensus, as attested to by the extreme difference between the U.S.'s flexible fair use policy and the European Union's more restrictive stance under Article 17 of the Copyright Directive, leaving the world with a patchwork legal environment.

3. Blockchain's Inflexibility in Fair Use Determination

Although blockchain technology provides creative solutions for managing copyrights, its existing applications pose serious obstacles to fair use accommodation. Smart contracts that are created for automated licensing do not have the sophistication required to assess key fair use factors like transformativeness or non-commercial purpose[14]. The advent of NFTs has also made things more complex, with platforms often blocking valid derivative works such as memes or remixes on account of excessive automated copyright claims, even though they may have the potential for fair use[15]. Furthermore, the decentralized character of blockchain enforcement systems, although positive in that it protects against tampering, also limits flexibility to the extent of making it greatly harder to dispute or reverse spurious copyright notices posted on indelible ledgers.

4. Platform Liability and the Chilling Effect on Creativity

Existing copyright enforcement systems disproportionately burden digital platforms and lead to system suppression of creative expression. The DMCA's notice-and-takedown regime, although well-meaning, has been weaponized by abusive claims that muzzle critics, journalists,

[12] Supra Note 2.
[13] Samuelson, P., Generative AI and Copyright Law, 2023.
[14] Supra Note 8.
[15] Chohan, R., Non-Fungible Tokens: Blockchains, Scarcity, and Value, 2021.

and educators[16]. The European Union's Article 17 has compounded these problems by placing the enforcement burden squarely on platforms, forcing them to adopt aggressive preemptive filtering regimes that necessarily censor legitimate fair use content. These issues are exacerbated by structural impediments that deter users from contesting erroneous takedowns, such as complicated counter-notice processes and the absence of substantial incentives to seek appeals against big rightsholders.

5. Economic Pressures Favoring Restrictive Copyright

Underlying economic forces instill systemic incentives that erode fair use safeguards in digital spaces. Platforms are under intense financial pressure to prioritize rightsholder interests, taking preemptive content removal policies as a risk-averse approach to preventing expensive litigation. This economic calculation has driven the creation of licensing models that effectively deter fair use - especially where micropayment requirements for even minimal content use impose onerous costs on critical commentary, educational uses, and other transformative uses. These market-driven forces create an environment where copyright protection routinely trumps legitimate fair use considerations, distorting the intended balance of intellectual property law.

3.2 THE LEGAL AND POLICY PROPOSALS

1. Reforming Automated Enforcement to Preserve Fair Use

The existing over-reliance on automatic copyright enforcement mechanisms requires major reforms to maintain fair use protections. To begin with, platforms need to be required by law to have human review processes for contentious copyright claims in order to make proper assessment of possible fair use considerations prior to content removal[17]. Second, the training datasets and algorithms driving content identification systems need to be significantly improved, namely in their capacity to identify legitimate transformative uses, parodies, and educational exceptions. Third, the creation of an independent appeals body with copyright specialist expertise would serve as a key check on platform discretion, affording users a reasonable chance to appeal wrongful takedowns without being subject to the existing asymmetry of power against large rightsholders.

[16] Husovec, M., The New EU Copyright Law: How the Copyright Directive Will Reshape the Internet, (2020).
[17] Supra Note 10.

2. Clarifying Fair Use in AI and Blockchain Contexts

The legal regime needs to adapt to deal with new technologies while upholding fair use principles. Legislators ought to obviously differentiate between acceptable AI training on copyrighted content (which ought to broadly be considered fair use) and genuine reproduction/distribution of safeguarded works. Such a U.S.-style adaptability principle ought to be embraced globally to decrease fragmentation. Non-commercial AI scholarship should have targeted exemptions akin to academic fair use safeguards. Moreover, creators should be afforded effective opt-out mechanisms in case they are opposed to their works being incorporated into AI training sets, reconciling innovation with creative control. These provisions would introduce necessary clarity while upholding the transformative value of AI technologies.

3. Enabling Blockchain for Fair Use Flexibility[18]

Blockchain deployments require architectural changes to support fair use exceptions. Smart contracts managing digital rights must include standardized "fair use clauses" that automatically authorize specific educational, critical, and parodic uses without the need for individual permissions. Decentralized mechanisms for dispute resolution would allow users to contest unjust NFT copyright[19] claims effectively. Also, creating universal standards for blockchain-based attribution would ensure authentic fair use claims while ensuring adequate credit to original authors. These technological fixes might preserve the advantages of blockchain without allowing its immutability to become a barrier to legal transformative applications.

4. Reforming Platform Laws of Liability

Existing platform liability regimes need drastic rebalancing in order to safeguard users' rights. The DMCA's counter-notice mechanisms[20] must be secured with tougher sanctions against malicious takedowns and streamlined procedures for disputing claims. Legislation such as the EU Copyright Directive's Article 17 must be revised to restrict preemptive content filtering requirements that necessarily stifle fair use content. Legislators must establish clear "fair use

[18] Supra Note 8.
[19] Supra Note 15.
[20] Suzor, N., Lawless: The Secret Rules That Govern Our Digital Lives, Cambridge University Press, 2019.

presumptions" for obviously transformative content types such as memes, remixes, and academic quotations, placing the burden of proof on claimants in these instances. Such reforms would restore the initial balance between protection and acceptable use intended in copyright law.

5. Encouraging Alternative Models of Licensing

New licensing options can fill the gap between protection under copyright and requirements for fair use. Increased use of Creative Commons and open licensing models dedicated to AI training data would open up transparent legal channels for technology development. An established "fair use marketplace" could make automation of licensing[21] of typical critical and educational uses more efficient, minimizing transaction costs. Creating collective licensing pools like ASCAP's music model, but for transformative works, would make permissions easier while providing compensation. Such market-based mechanisms could supplement legal reforms in achieving a more balanced copyright system.

CHAPTER IV

THE SHIFTING INTERSECTION OF FAIR USE AND NEW TECHNOLOGIES

The intersection of fair use and new technologies is a very much contested legal border, as artificial intelligence (AI), blockchain, and algorithmic content enforcement reshape established copyright paradigms. These technologies both offer opportunities and pose challenges, compelling legal thinkers and policymakers to rethink how fair use must shift in the digital era. Although they present new solutions to copyright management, they raise sophisticated issues about ownership, infringement, and artistic liberty. Courts and regulators are more and more challenged with figuring out how these new developments relate to established fair use doctrines and whether copyright law should be amended. AI has transformed content creation and copyright enforcement drastically, especially with the advent of generative AI models trained on large data sets with copyrighted material.

One of the chief legal issues is whether it's fair use or copyright infringement to train AI models on copyrighted content. It's been contended by some experts that AI content is transformative in nature, not copying per se but instead producing new forms of expression from learned

[21] Boyle, J., The Public Domain: Enclosing the Commons of the Mind, Yale University Press, 2018.

patterns. Still, recent lawsuits, such as The New York Times v. OpenAI[22], reflect the unsettled dispute regarding whether derivative works or summaries created through AI violate original copyrighted content. Courts will have to deal with these questions as they weigh the balance between promoting innovation and safeguarding intellectual property rights. Blockchain technology has also been suggested as a way of improving copyright enforcement and fair use management through decentralized verification of ownership and smart contracts. In contrast to conventional enforcement tools, blockchain provides open, tamper-evident records that could automate fair use licensing and royalty payments.

Yet, blockchain's inflexibility creates a challenge, for fair use is by its nature flexible and must be determined on an ad hoc legal basis. While blockchain can facilitate simplification of licensing and copyright authentication, it does not necessarily resolve the intricacies of fair use, for deciding what use is allowed remains a question of law, not technology. Algorithmic content enforcement by sites like YouTube, TikTok, and Facebook complicates the situation. Automatic copyright detection tools regularly mistake legally covered fair use content and over-block it, resulting in the censorship of lawful expression. Educational content, for instance, is often mistakenly labelled as copyright infringement by YouTube's Content ID tool because it can't examine contextual subtleties.

The increasing popularity of remix culture[23] on social media sites has further pushed the limits of fair use, with users increasingly manipulating copyrighted material to create new and innovative works. Scholars contend that the existing automated enforcement mechanisms are unable to make sound fair use judgments, and hence, more complex and balanced methodologies are required. While courts and lawmakers grapple with these new challenges, there is no doubt that fair use must be redetermined to adapt to the imperatives of the digital age. The conventional paradigm, which was created in a pre-digital era, should adjust to balance the interests of copyright owners with the requirements for creative expression and innovation. With the fast growth of technology, constant legal controversies would form the future of copyright law, and it would need a dynamic strategy that safeguards original creators and emerging digital innovators alike.

[22] Supra Note 3.
[23] Lessig, L., Remix: Making Art and Commerce Thrive in the Hybrid Economy, Penguin Press, 2008.

Assuring Fair Use Remains Alive During the Digital Age: An Integrative Policy Agenda

The digital revolution has revolutionized the copyright world, generating both unprecedented potential for creativity and formidable challenges for fair use protection. Navigating this challenging landscape, a multi-faceted strategy is necessary to ensure fair use remains a substantive right and not a hollow legal formalism. This involves concerted efforts in legislative, technological, and educational spheres to counter the systemic forces undermining fair use in the digital world.

At the policy level, legislators need to enact strong protections against the emerging menace of algorithmic overreach in copyright enforcement. This entails laying down precise legal standards for AI content moderation mechanisms, requiring human oversight for disputed claims, and instituting independent oversight bodies so that automated mechanisms do not take away fair use protections. At the same time, legislators must bring much-needed legal certainty to new technologies, especially with regard to AI training data and blockchain-based copyright management. A balanced approach would acknowledge legitimate fair use applications in machine learning while safeguarding creator rights through reasonable opt-out mechanisms.

The rebalancing of platform liability frameworks is another essential frontier for reform. Existing systems such as the DMCA's notice-and-takedown system and the EU's Article 17 have engendered perverse incentives that unbalancedly benefit rightsholders. Reforms in legislation should enhance users' protection against abusive takedowns, restrict required filtering obligations, and establish rebuttable presumptions of fair use for obviously transformative categories such as parody and academic critique. Such reforms need to be accompanied by technological solutions that incorporate fair use considerations directly into digital rights management systems.

Technology can be a major force in supporting fair use with the creation of next-generation copyright technologies. Smart contracts and blockchains must incorporate inherent flexibility in fair use exceptions, and algorithms for identifying content must be upgraded significantly to distinguish transformative works. Standardized fair use claim metadata and decentralized means of resolving disputes could ensure a balance between protection and acceptable use in automated regimes.

Market-based alternatives provide another avenue for maintaining fair use in application. Broadening open licensing structures, creating collective licensing pools for transformative works, and establishing efficient mechanisms for education and critical use can minimize obstacles while providing for fair remuneration. Public support for open access programs through funding and tax incentives for rightsholders incorporating fair use-favorable policies should underwrite these measures.

Education and awareness-building constitute the last pillar of this holistic strategy. Legal literacy training for creators, users, and platform operators can avoid the chilling effects of excessive enforcement. Law schools and tech programs must work together to educate a new generation of copyright professionals who can navigate these issues. Public institutions such as libraries and universities need to be enabled to act as fair use champions in the digital age.

Finally, maintaining fair use in the digital age means understanding it not as a copyright exception, but as a fundamental aspect of a vibrant creative ecosystem. The steps set forth here seek to establish a climate in which technological innovation, creative expression, and public access to knowledge can coexist and support each other. By enacting these reforms, we can make copyright law serve its constitutional role of advancing progress in the arts and sciences, instead of acting as a barrier to cultural participation and innovation in the digital era.

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