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Entry

AI, Authorship, Copyright, and Human Originality

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Definition

This entry explores the implications of generative AI for the underlying foundational premises of copyright law and the potential threat it poses to human creativity. It identifies the gaps and inconsistencies in legal frameworks as regards authorship, training-data use, moral rights, and human originality in the context of AI systems that are capable of imitating human expression at both syntactic and semantic levels. The entry includes: (i) a comparative analysis of the legal frameworks of the United Kingdom, United States, and Germany, using the Berne Convention as a harmonising baseline, (ii) a systematic synthesis of the relevant academic literature, and (iii) insights gained from semi-structured interviews with legal scholars, AI developers, industry stakeholders, and creators. Evidence suggests that existing laws are ill-equipped for semantic and stylistic reproduction; there is no agreement on authorship, no clear licensing model for training data, and inadequate protection for the moral identity of creators—especially posthumously, where explicit protections for likeness, voice, and style are fragmented. The entry puts forward a draft global framework to restore legal certainty and cultural value, incorporating a semantics-aware definition of the term "work", and encompassing licensing and remuneration of training data, enhanced moral and posthumous rights, as well as enforceable transparency. At the same time, parallel personality-based safeguards, including rights of publicity, image, or likeness, although present in all three jurisdictions studied, are not subject to the same copyright and thus do not offer any coherent or adequate protection against semantic or stylistic imitation, which once again highlights the need for a more unified and robust copyright strategy.

Keywords: artificial intelligence; AI; copyright; moral rights; authorship; training data; human originality; transparency; global framework

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1. Introduction

Generative artificial intelligence (AI) has reached a level of sophistication that allows it to autonomously mimic the syntax and semantics of human expression. This technology challenges the key assumptions of copyright law, which is based on human authorship, originality, and moral integrity. Earlier this year (2025), Sir Elton John expressed his concerns that "wheels are in motion to allow AI companies to ride roughshod over the traditional copyright laws that protect artists' livelihoods" and that "this will allow global big tech companies to gain free and easy access to artists' work in order to train their artificial intelligence and create competing music" [1] (p. 2). In this context, the Berne Convention can be used as the yardstick against which the copyright regimes of the United Kingdom,

the United States, and Germany are measured. While the Berne Convention continues to be the foundation of international copyright harmonisation, it was designed in a pre-digital era when AI systems capable of replicating style, voice, and creative identity were not envisaged.

The analysis presented here is organised around the MATH-COPE matrix, a conceptual and methodological framework based on an initial review of the relevant literature, which combines doctrinal and practical perspectives. The framework, discussed in more detail below, offers a coherent cross-cutting prism that allows the identification of the major doctrinal and practical issues and the formulation of reform proposals.

The overall purpose of the entry is to explore the current issues surrounding AI and copyright and put forward a draft global copyright framework to address these issues and related concerns. This entry takes a doctrinal-comparative approach, looking at the legal systems of the three countries noted above. It combines a systematic synthesis of the current academic debates with reports on insights gained from semi-structured interviews with relevant parties [2]. Rather than creating new empirical data, this work is a curation of well-established knowledge and convergent practice indicators to provide an actionable blueprint for a new copyright framework. In addition, the entry puts forward a semantics-aware definition of "work" which does not lose sight of the locus of human originality, yet allows the factoring in of AI-assisted creation. It also presents a pragmatic implementation strategy—including licensing regimes, levels of transparency and enforcement mechanisms—that can be pursued multilaterally without requiring a revision of the Berne Convention.

2. The MATH-COPE Framework

From an initial review of the literature and existing case law [3–33], it was clear that no legal doctrine was available or in operation to capture the complex issues raised by generative AI. To structure the investigation, an initial conceptual framework was developed, the MATH-COPE framework (Table 1).

Table 1. The MATH-COPE framework for mapping relevant themes and dimensions.

	Legal Issues				
	MATH themes/ COPE dimensions	**M**oral Rights	**A**uthorship & Originality	**T**raining Data & Copyright	**H**uman Originality
Social & Economic Context	**C**ommercialisation				
	Organisational Practice				
	Policy & Governance				
	Ethical Technology				

This framework is based on four themes that encompass the main legal issues:

- Moral rights: including integrity, attribution, and posthumous exploitation.
- Authorship and originality: understanding the role of human creativity in the age of AI tools.
- Training data and copyright: determining whether large-scale text and data mining is infringement or fair use and an exception doctrine.
- Human originality: the protection of the semantic and stylistic identity of authors in the context of artificial intelligence reproduction.
- These themes are then assessed in the context of four analytical dimensions that reflect the wider social and economic context:
- Commercialisation: the market structures and remuneration mechanisms for human work in AI-based economies

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- Organisational practice: how industry actors, publishers, and platforms are integrating AI into their operational workflows.
- Policy and governance: the national and international regulatory frameworks, the Berne Convention being taken as the reference standard.
- Ethical technology: accountability, transparency, and the developer's responsibilities in AI design.

The four analytic dimensions identified (COPE) have an impact on all four themes (MATH). As a result of this, there are sixteen areas to be explored in depth. Table 1 shows this in diagrammatic form. The framework allows for the identification of doctrinal gaps in the existing copyright legislation, the contextualisation of stakeholder positions, and the systematic development of reform proposals. The MATH-COPE matrix can thus be viewed as a provisional analytical framework that supports the mapping of the disjointed discourse of the numerous overlapping concerns that generative AI raises. The framework does not attempt to provide a comprehensive doctrinal coverage of copyright law. Issues relating to the right to exploitation, voice, and style as aspects of personality, and GDPR, are not an integral part of the matrix, although they are considered in connection with the analysis of moral rights, training-data practices, and posthumous protection.

3. The Legal Frameworks of Germany, the UK, and the USA

When comparing national copyright laws, the Berne Convention is a harmonising reference point. Nonetheless, each jurisdiction interprets and applies core concepts—such as originality, authorship, and moral rights—albeit in different ways. This section describes the doctrinal basis and limitations in the three jurisdictions that are central to this study.

3.1. United Kingdom

3.1.1. Statutory Basis

Section 9(3) of the Copyright, Designs and Patents Act 1988 (CDPA) includes a clause for "computer-generated works" and states that the author of a work is "the person by whom the arrangements necessary for the creation of the work are undertaken". This pragmatic formula is a functional formula but avoids the requirement of originality, which is at the heart of the Berne Convention. While text and data mining (TDM) is allowed in the UK, as an exception to copyright restrictions, the extent of this remains disputed, especially as AI systems advance from syntactic reproduction to semantic reproduction. Moral rights do exist but are relatively weak, and do not extend to posthumous protection of a creator's style or likeness.

3.1.2. Doctrinal Stress Points

Section 9(3) of the CDPA attributes authorship of "computer-generated" works to the person making the arrangements, thus bypassing the originality test associated with human creative decisions. Even though Section 9(3) of the CDPA permits functional attribution of so-called computer-generated works, it does not imply that the works that lack human originality are safeguarded under the Berne Convention. Moreover, this provision was developed in a pre-AI environment and cannot be interpreted as an abandonment of the inherently human-focused requirement of originality.

TDM exceptions are helpful for research use; however, commercial-scale training leading to semantic imitation is a grey area, particularly when the outputs are close to an identifiable style or voice. Moral rights, therefore, provide a weaker remedy for posthumous or stylistic misappropriation than persona rights. As a result, posthumous misappropriation tends to rely on passing-off actions (unfair exploitation of another's

reputation), while stylistic imitation is usually addressed through data- or consumer-law workarounds.

3.2. United States

3.2.1. Statutory Basis

United States copyright law, codified in Title 17 U.S.C., requires that works be authored by a human being in order to be protected. Additionally, U.S. case law consistently affirms that copyright protection requires human authorship. As of 2025, the US courts had not made any rulings directly concerning the authorship of a work of generative AI. The precedent that was available to rely on was that of non-human entities in general, as evidenced in Naruto v. Slater [3]. The court decided that a non-human entity could not be described as the author of a work or make any claims of copyright. Even though it is not an AI case, Naruto gave the only doctrinal foundation of the principle according to which the protection of copyright assumes the existence of a human author. Thaler v. Perlmutter [4] was the first application of this principle to generative AI. The court denied registration of a work generated independently by the generative AI system of Dr Thaler, the Creativity Machine. Together, Naruto and Thaler represent a uniform doctrinal path; authorship and, by extension, copyright protection must be created by a human being.

This principle has been reaffirmed by the U.S. Copyright Office, which has refused to register works that were created entirely by AI. Training data use is covered by the flexible doctrine of fair use [5], but there is a sharp divergence of litigation and scholarly opinion on whether large-scale data scraping is fair. Unlike civil law jurisdictions, moral rights are underdeveloped in U.S. law [6], limited mainly to the Visual Artists Rights Act (VARA), leaving large gaps for protection of style, reputation, or posthumous identity.

3.2.2. Doctrinal Stress Points (US)

The human authorship baseline (registration practice and case law) excludes AI—only outputs from being covered by copyright. Training disputes turn on fact-sensitive fair use factors—purpose, amount, market effect, and the nature of intermediate copying. In such cases, plaintiffs have argued substitution and reputational harm, whereas defendants have invoked transformation and non- substitutive learning. Yet federal coverage (VARA scope, limited categories) remains limited to narrow categories. While the reproduction of a style or voice may further a trademark or a right of publicity (which varies from State to State), it remains a matter of unfair competition when occurring outside the scope of federal copyright law. Equally, name, image, and likeness (NIL) rights do not offer wholesome protection against style imitation, even though NIL is a federal concept; in certain situations, its application is undermined by State-level publicity statutes, which fail to create uniform or nationwide protection.

3.3. Germany

3.3.1. Statutory Basis

The German Copyright Act (Urheberrechtsgesetz—UrhG) defines authorship as a personal intellectual creation (persönliche geistige Schöpfung), which firmly bases copyright on human originality. Works that are created without human creative input are not protected. Moral rights, on the other hand, are relatively strong; they include attribution, integrity, and some personality-based protection rights that are posthumous. Nonetheless, Germany does not have explicit regulations for AI training data and does not provide any targeted protection against the imitation of an artist's style or voice by AI systems. The right to one's own image does not offer any protection here either, nor do other legal constructs under German law. This reflects an emerging tension between the human-

centric focus on human creativity and the technological ability of AI to reproduce human originality.

3.3.2. Doctrinal Stress Points (DE)

The personal intellectual creation (§ 2 Abs. 1 UrhG) threshold keeps AI-only outputs without protection, but AI-assisted thresholds are not codified, leaving it unclear where meaningful human control begins and ends. Moral rights (including post-mortem protection) are relatively strong, but style or voice cloning using models escapes traditional tests of integrity. The exceptions for use of text or data were not intended for use in semantic modelling at scale; licensing transparency and auditability are the biggest gaps in practical implementation.

Doctrinal differences between the three legal systems highlight inconsistencies not only in authorship, training data, moral rights and originality (MATH) but also in the wider commercial, organisational, policy and ethical (COPE) contexts. For example, the UK's pragmatic approach is a reflection of organisational convenience, the US is heavily dependent on market-driven commercial practice, and Germany has a strong ethical-cultural commitment to originality. These variations are summarised within the MATH-COPE matrix in Table 2.

Table 2. Comparison and summary of the three legal frameworks.

MATH/ COPE	Moral Rights (M)	Authorship and Originality (A)	Training Data (T)	Human Originality (H)
Commercialisation (C)	UK/US: Weak moral rights; no robust posthumous safeguards. GE: Stronger, but analogue and not tailored to AI imitation.	UK: Section 9(3) allows "computer-generated works," bypassing originality. US: Strict human authorship baseline. GE: Only "personal intellectual creation".	UK: Limited TDM exception, uncertain for semantic training. US: Fair use unresolved for large-scale scraping. GE: Exceptions not designed for AI scale.	Market risk: semantic imitation undermines distinctiveness; economic erosion across all three systems.
Organisational Practice (O)	Attribution gaps for reused styles/voices across jurisdictions.	Hybrid authorship thresholds unclear; no guidance for "meaningful human control".	Dataset opacity; lack of provenance across publishers and platforms.	Style/voice replication adopted in workflows without safeguards; creators displaced.
Policy and Governance (P)	Fragmented: UK/US offer minimal posthumous protection; DE more robust but nationally limited.	No harmonised doctrine on AI-assisted works; Berne is silent on hybrids (i.e., no explicit rule).	No cross-border clarity: US (fair use), UK (TDM), and GE (UrhG exceptions) diverge.	No international enforcement standard for semantic/style replication; forum-shopping risk.
Ethical Technology (E)	Persona/voice can be cloned without consent.	AI outputs may simulate creativity without human authorship.	Risks of memorisation and leakage from opaque models.	Semantic mimicry threatens authenticity and cultural trust in creative expression.

4. The Relevant Literature and Emergent Issues

The body of academic and doctrinal work on AI and copyright has grown rapidly in recent years, but is fragmented and inconclusive. The extant literature can be analysed using the four key themes in the MATH-COPE framework: Moral Rights (M), Authorship and Originality (A), Training Data and Copyright (T), and Human Originality (H).

4.1. Moral Rights

Existing moral-rights frameworks are generally seen as inadequate to deal with AI's reproduction of an author's style, voice, or persona [7–17]. In the common law, moral and posthumous rights are not well protected. Civil-law systems keep human-centred protection but are poorly suited to digital imitation [12–15]. Attribution is a powerful and assertable form of moral right in Germany, with the case of Spiegel OLG Hamburg representing an instance of how omission of credit may increase the cost of the license fee in the form of an infringement surcharge (Verletzerzuschlag) of two times the amount [16]. Nevertheless, within the context of AI-generated works, these solutions are highly inappropriate, since there is no face to name, and the style imitation is virtually uncontrolled [17–19].

Academic commentary has focused on posthumous vulnerability, in which the identity or voice of dead authors can be reproduced without permission [18,19]. Watermarking is an early attempt to address this problem [20], but moral rights cannot be protected this way. A more recent development in the theory of moral rights is the demand to situate the concept of integrity and attribution rights within the context of AI-mediated reproductions and personality simulations to bridge the existing divide in human and synthetic identity protection [21–27]. Economic analyses focus on the distortions in the market caused by the lack of licensed stylistic imitation and the lack of moral protection of personality [15,28].

4.2. Authorship and Originality

The question of how human authorship and AI-generated content relate to each other remains contested across scholarship [28,29]. Foundational principles such as Feist v. Rural (1991) and Section 9(3) of the CDPA 1988 confirm that originality assumes the human creative decisions [13,14]. U.S. case law, including Naruto v. Slater, Thaler v Perlmutter, and Zarya of the Dawn of the USCO, support the exclusion of non-human authorship from copyright protection [3–5]. The concept of meaningful human control in AI-assisted creation, as various scholars observe, is a concept that is naturally hard to define [23–29]. New proposals indicate practical thresholds depending on observable human selection or refinement as opposed to prompting [18,19].

4.3. Training Data and Copyright

Courts have been unable to apply and enforce the current copyright doctrines to AI training. In Kneschke v. LAION [30], for example, the case of ingesting the works of a photographer was considered permissible text and data mining by the court. This classification overlooks the fact that generative AI systems do not simply process syntax but recreate semantic information [14]. This misclassification reflects the conceptual disorientation of AI training and authorship limits [17].

The issue of whether model training through large-scale data scraping constitutes infringement or instead falls under fair use or text-and-data-mining (TDM) exceptions has been hotly debated among courts and scholars [14,17,23,25,27]. Some authors compare AI training to the human learning process, suggesting that copying in between can be considered acceptable in both fair-use and TDM exemptions [14,31,34]. Others emphasise the industrial magnitude of training and the lack of consent provisions, making it clear that semantic replication is much more than what is permitted as data mining [7,14,25].

Recent cases—Getty v. Stability AI, Bartz v. Anthropic, and Kneschke v. LAION—have initiated the experimentation of the boundaries of the fair-use and European TDM systems, showing the incoherence with which courts determine the differences between syntactic and semantic reproduction [30,32,33]. The literature points to inexhaustible intransparency, licensing, and compensations to rights-holders whose works are utilised in training datasets [14,17,34]. Proposed reforms include compulsory or longer-term

collective licensing, data registries that can be audited, and provenance standards that can be used to trace training inputs [17,25,27]. Economic theories of input- and output-based remunerations strive to reconcile innovation incentives with fair compensation to creators [15]. Nonetheless, the inconsistency of international enforcement encourages forum shopping as well as burdens smaller participants with disproportionate compliance costs [30,34].

These cases remain confined to highly specific factual situations across all three jurisdictions and therefore provide no generalisable doctrinal solution to the structural copyright challenges posed by generative AI.

4.4. Human Originality

AI systems are increasingly able to imitate not only syntactically, but also semantically, the concept of human originality, which is thus being subjected to renewed scrutiny [7,9,10,14,17]. If originality is narrowed to statistical recombination, the human contribution is in danger of being economically and culturally marginalised [7,15,18]. Several scholars have suggested there should be criteria for "semantic originality" that preserve the human meaning-making, rather than the algorithmic patterning [9,23,25]. Proposed mechanisms include provenance registers, authorship certification, and watermarking for human-generated works [20,23,25]. Market and doctrinal analyses emphasise the importance of recognisable human creativity being eroded, as this would have adverse effects on public trust and long-term cultural value [15,25,28,34]. Emerging case law, e.g., Spiegel OLG Hamburg, Getty v. Stability AI and Bartz v. Anthropic, is a reaction to the increasing concern about semantic imitation and personality dilution [16,32,33].

4.5. Synthesis and Gap Analysis

The extant literature indicates a general consensus that traditional copyright doctrines are not sufficient to deal with AI-related issues. Most proposals focus on isolated aspects—training data, authorship, or moral rights—without creating a comprehensive framework [14,17,25,27]. Emergent issues from the literature include: the importance of retention of the human creative nexus; the need to ensure that AI-assisted processes are transparent and traceable; and the need to align economic incentives with authorship integrity [7,15,34]. In addition, judicial decisions [3,4,12] support the conclusion that human creative control is a necessary condition for copyright protection [14,17].

The literature also puts forward a number of possible changes, including:

- Compulsory or extended collective licensing of AI training, with narrowly defined research exceptions [17,25,27];
- A semantic-originality test involving human meaning-making as opposed to algorithmic novelty [9,14,23]; and
- Multi-tier transparency obligations to allow lineage disclosure and audit by regulators, avoiding trade secrets disclosure [17,20,25].

The nature of such measures highlights that, for sustainable reform to work, it needs to be doctrinally precise and operationally enforceable. Shortcomings (Table 3) are also identified, including:

- The absence of operational definitions for thresholds of AI assistance that can be applied across jurisdictions [25,27,31];
- Lack of validated measures of stylistic or vocal similarity without false positives [9,14,30]; and
- Enforcement fragmentation across borders and disproportionate costs of compliance for the small-scale operators [17,25,34].

Table 3. Main shortcomings are evidenced in the extant literature.

MATH/ COPE	Moral Rights (M)	Authorship and Originality (A)	Training Data (T)	Human Originality (H)
Commercialisation (C)	Lack of enforceable attribution in AI-generated media ([6,8,14,16,21]).	Unclear ownership of commercially valuable AI outputs ([3,4,6,9,22–27]). Cases: Naruto v. Slater (2018) [3]; Zarya of the Dawn (2023) [5].	Unlicensed monetisation of large-scale training datasets ([13,16,24,26,33]). Cases: Getty v. Stability AI (pending) [32]; Koepscke v. LAION (2024) [30]; Bartz v. Anthropic (2025) [33].	Market displacement of human creators through stylistic mimicry ([13,14,27,33]).
Organisational Practice (O)	Moral rights are ignored in AI production workflows ([6–8,16]).	Authorship attribution bypassed by automated pipelines ([4,22–24,26]). Case: Zarya of the Dawn (2023) [5].	No metadata standards for source traceability ([13,16,24,33]).	Style extraction decouples originality from authorship ([13,14,27]).
Policy and Governance (P)	Legal uncertainty around rights to control AI-driven imitations ([11,14,16]).	No unified definition of AI-assisted or AI-generated authorship (Naruto v. Slater, 2018 [3]; Zarya of the Dawn (2023) [5]).	Fragmented national rules on TDM and fair use ([13,16,24,26]). Cases: Getty v. Stability AI [32]; Koepscke v. LAION [30]; Bartz v. Anthropic [33].	Style and voice are excluded from originality criteria ([11,13,14,16]).
Ethical Technology (E)	AI emulates reputational identity without creator consent ([6,8,14,16]).	No accountability for fabricated authorial intent ([22–24]).	Semantic learning lacks safeguards for sensitive data ([13,16,24,26]).	Human uniqueness blurred by high-fidelity simulation ([13,14,27]).

These weaknesses in the current legislative and operational frameworks attest to the fact that doctrinal evolution must be placed within the context of systemic reform in commercial, organisational, policy and ethical terms. The reviewed literature implicitly reflects the four contextual COPE dimensions: Commercialisation (C)—issues of market dilution and fair remuneration [15,28]; Organisational Practice (O)—rapid adoption of AI by publishers and platforms [14,30]; Policy (P)—fragmented national initiatives, limited international coordination [17,25,27]; and Ethical Technology (E)—issues of accountability and responsibility in AI development [9,21,24]. Overall, the literature indicates that copyright reform needs to go beyond a focus on doctrinal adjustment and focus on an integrated approach that connects law, commerce, and ethics in a system-wide manner.

5. Stakeholder Perspectives

Recent research by Neubauer [2] reported the findings from semi-structured interviews conducted with four stakeholder groups—legal experts, AI developers, content creators, and industry representatives—to obtain empirical insights into current practice and perceptions. The perspectives gathered illuminate the lived effects of doctrinal uncertainty and inform priorities for future reform. Results from the interviews are summarised here.

Legal experts called for clear guidance on authorship attribution and supported the Berne Convention as the basis for reform. A common concern was the possibility of AI outputs being considered "works" and undermining the human-centred function of

copyright. For AI Developers**, s**emantic replication was seen as a particular challenge. They recognised that training models on both syntactic and semantic features increases the risk of style imitation. Developers demanded clear standards and liability frameworks that would provide certainty without impeding innovation. Content creators—writers, musicians, visual artists, and voice actors—had major concerns regarding displacement and the loss of their moral identity. They resisted the acknowledgement of AI as co-creator and demanded protections for style, voice, and posthumous identity. Both training data and output-based remuneration models were found to be critical to maintaining livelihoods. Industry stakeholders—from publishing, entertainment, and platform businesses—were mainly concerned about commercial certainty. They emphasised the importance of having enforceable licensing models for training data, harmonisation of mechanisms for revenue-sharing and standardisation internationally to prevent competitive distortions across jurisdictions.

One common theme that emerged across all groups was that AI should be a tool and not a co-author. Together, stakeholders called for the need to redefine what work is, to maintain the semantic and syntactic originality of the human creator, while providing transparent systems of use of AI in production and distribution. In addition, the responses presented by all stakeholder groups display some common concerns regarding the elimination of authorship, attribution, and human originality in the AI-driven production processes (Table 4). Lawyers and creators stress the necessity of clarity in doctrines, consistency of attribution, and participation of a human being in production processes, whereas developers focus on the lack of transparency, information obscurantism in provenance, as well as ambiguity in liability models. Industry representatives were concerned with the commercial fairness and the elimination of the distortion of the market, and all groups emphasised the lack of harmonised regulations and the moral protection of the semantic and stylistic copying. This interview evidence points to a pressing need for proper legal definitions, transparency norms that should be enforced, and the identification of human originality as the ethical basis of the copyright legislation.

Table 4. Stakeholder group perspectives (based on Neubauer [2]).

MATH/ COPE	Moral Rights (M)	Authorship and Originality (A)	Training Data (T)	Human Originality (H)
Commercialisation (C)	Creators fear erosion of attribution and integrity rights; industry wants clarity to protect markets.	Legal experts reject AI as a co-author to preserve market certainty; industry demands predictable attribution.	Stakeholders demand licensing rails with remuneration to prevent unfair competition.	All groups warn of market dilution and loss of cultural value through AI-driven imitation.
Organisational Practice (O)	No attribution safeguards in AI workflows; moral identity sidelined in production.	Authorship unverifiable in automated pipelines; creators demand human-in-the-loop criteria.	Developers admit opacity in data provenance; industry seeks standardised licensing mechanisms.	Creators report displacement through style/voice replication adopted in workflows.
Policy and Governance (P)	Lawyers stress the lack of harmonised safeguards for moral/personality rights.	Legal experts call for doctrinal clarity: AI = tool, not author.	Policymakers lag behind: fragmented exceptions (fair use, TDM) leave gaps.	No enforcement standards for semantic originality; all groups stress governance deficit.
Ethical Technology (E)	Voice/style imitation is seen as unethical exploitation;	Stakeholders oppose "co-authorship" fictions; creators stress	Developers acknowledge the need for transparency and liability frameworks.	AI mimicry undermines authenticity and trust; strong

posthumous misuse is especially criticised.	human originality as an ethical baseline.	ethical concern across all groups.

6. Integrating Evidence: Towards a Global Copyright Framework

The combination of doctrinal analysis, scholarly debate and stakeholder perspectives within the MATH-COPE matrix exposes weaknesses that are not bridged by national laws, the literature, and practice. As regards the four main themes, these can be summarised as follows:

- Moral Rights: Moral rights are not adequately protected, especially in the posthumous context. UK and US law offer little protection against style or voice imitation. German law is somewhat better, but it is still human-centric and analogue in design.
- Authorship and Originality: Courts and legislators require human authorship but offer no guidance for works that involve human and AI collaboration. This puts creators and publishers in a state of uncertainty.
- Training Data: There is no agreement across jurisdictions on whether large-scale scraping for model training is allowed. Fair use in the US, TDM in the UK, and exceptions in Germany are still ambiguous, especially since AI tools are no longer limited to syntax but also semantics.
- Human Originality: Interviewees emphasised the threat of semantic replication to the originality of artistic voice, and the literature emphasised the loss of cultural and economic value.

In terms of the applied COPE dimensions:

- Commercialisation: Market players need to be able to clearly license and remunerate to prevent undermining human creators.
- Organisational Practice: Publishers and platforms are using AI tools without regulatory certainty, creating competitive asymmetries.
- Policy and Governance: Policymakers are not well equipped to apply Berne principles to an AI-enabled environment, and the result is fragmented approaches.
- Ethical Technology: Developers are asking for collective ownership and open standards to reduce risks of style and identity copying.

These weaknesses are summarised in Table 5. Taken together, these findings suggest the urgent need for a global framework that redefines the fundamental concepts of the underpinning law, establishes licensing mechanisms for data in training, enhances moral and posthuman rights, and requires transparency. The MATH-COPE matrix brings to the fore a key design rule for reform: doctrinal fixes fail without operational rails. licensing without provenance collapses; transparency without audit is performative; stronger moral rights, without cross-border remedies, shift the problem elsewhere. Definitions, however, need to be accompanied by verification, routing, and redress in a working framework. This illustrates the impossibility of separating the doctrinal and practical shortcomings (MATH) from broader systemic problems (COPE) in practice. Only by working on the interface between both dimensions can reforms be legal, ethical, and commercially viable. Against this background, the following draft framework translates doctrinal insights into an enforceable legal design.

Table 5. Summary of weaknesses in current legislation and practice (based on Neubauer [2]).

MATH/ COPE	Moral Rights	Authorship	Training Data	Human Originality
Commercialisation	posthumous rights gap	AI ≠ author (market clarity)	unlicensed dataset inputs	market dilution of creators
Organisational Practice	attribution missing in workflows	unclear thresholds for human control	opaque provenance/no metadata	style/voice replication adopted in pipelines
Policy and Governance	fragmented protection regimes	Berne is silent on hybrids (i.e., no explicit rule).	TDM vs. fair use ambiguity	no international harmonisation
Ethical Technology	ethical misuse of persona/voice	deceptive representation risks	semantic copying without consent	identity mimicry/erosion of trust

7. The Draft Global Copyright Framework

This section puts forward a draft copyright framework of eleven articles that builds on the principles of the Berne Convention and modifies them to take into account the semantic and syntactic replication capabilities inherent in AI. Each of the eleven articles deals with a particular deficiency identified in the MATH-COPE analysis (Table 6).

1. Definition of "Work"—A work is defined to be the combination of semantic and syntactic elements created through human originality, therefore making it impossible for AI outputs to claim their own authorship.

Rationale: The definition solidifies the semantic nexus of human sense-making and is designed to discourage backdoor arguments of AI-only outputs, while continuing to allow for AI facilitation when human selection/arrangement can be proven.

2. Authorship Attribution—The article makes it clear that AI-assisted works are still protected by retaining human authorship, and AI-only works are not.

Rationale: The specification prevents category errors (tool = author) and demands human creative control over the document in addition to generic prompting.

3. Training Data Licensing—A licensing regime for AI training data is introduced, including provisions for remuneration for rights holders.

Rationale: This solution solves the problem of friction caused by intermediate copying and sets up predictable remuneration without unduly stifling research-grade uses.

4. Revenue Sharing—Compensation models are proposed for creators whose works form training datasets, and for works that copy-protected styles.

Rationale: The framework outlines input—based and output—proximity channels to correspond to different harm and benefit surfaces.

5. Moral Rights—Attribution and integrity rights are extended to explicitly include AI-generated copies of style, voice, and likeness.

Rationale: This measure helps to close the persona/voice imitation gap and helps to build trust through non-deceptive presentation.

6. Transparency Obligations—The article requires transparency on the use of AI in creative works, such as the datasets and models used.

Rationale: The duty has multiple tiers that respect trade secrets, facilitate regulatory inspection, and encourage clarity to the user.

7. Posthumous Protection—The framework protects against the use of a deceased person's likeness, voice, or style without the permission of heirs or estates.

Rationale: It deals with postmortem exploitation in a way that is consistent with the mandates and cultural interests of estates.

Table 6. Articles from the draft global copyright framework (allocated to the appropriate cell in the MATH-COPE matrix).

MATH/ COPE	Moral Rights (M)	Authorship and Originality (A)	Training Data (T)	Human Originality (H)
Commercialisation (C)	Art. 4 Revenue Sharing—ensures creators are remunerated when AI outputs replicate protected styles/voices.	Art. 2 Authorship Attribution—keeps market clarity: only humans are rights holders, AI remains a tool.	Art. 3 Training Data Licensing—mandatory licenses stabilise markets, prevent free-riding.	Art. 1 Definition of "Work"—preserves economic value of human originality by excluding AI-only outputs.
Organisational Practice (O)	Art. 5 Moral Rights—obliges platforms to respect attribution/integrity, even in AI-assisted outputs.	Art. 2 Authorship Attribution—sets "human-in-the-loop" criteria for industry workflows.	Art. 6 Transparency Obligations—requires disclosure of datasets/models in outputs.	Art. 9 Technological Measures—watermarking/provenance tools support compliance in publishing pipelines.
Policy and Governance (P)	Art. 7 Posthumous Protection—fills doctrinal gaps in Berne by safeguarding style/likeness after death.	Art. 10 International Harmonisation—aligns national law with Berne, introduces AI-specific clauses.	Art. 11 Implementation and Enforcement—cross-border dispute resolution, sanctions for dataset misuse.	Art. 8 Educational Exceptions—balances copyright with research policy, limits scope of replication.
Ethical Technology (E)	Art. 5 Moral Rights—closes the ethical gap of style/voice imitation, prevents deceptive AI use.	Art. 2 Authorship Attribution—prevents false attribution of creativity to machines.	Art. 6 Transparency Obligations—audit trails, regulator access, accountability of developers.	Art. 7 Posthumous Protection + Art. 9 Technological Measures—ethical guardrails against exploitative mimicry, support trust in originality.

8. Educational Exceptions—Strict transparency and non-replication guarantees are maintained for limited exceptions for academic and non-commercial research.

Rationale: The provision upholds the principle of open science, while allowing narrow, auditable exceptions.

9. Technological Measures—The article promotes watermarking, attribution tools, and audit systems to make them enforceable.

Rationale: Provision of watermarking and provenance is mapped onto platform responsibilities and acts against any "compliance theatre".

10. International Harmonisation—The framework calls for conformity with Berne principles but also introduces AI-specific standards which can be implemented multilaterally.

Rationale: Model clauses for Mutual Recognition and Alternative Dispute Resolution (ADR) Limits "Forum Shopping" (i.e., the practice of choosing the most favourable jurisdiction to gain legal advantage).

11. Implementation and Enforcement—The article provides for cross—border cooperation, dispute resolution and sanctions to ensure compliance.

Rationale: It is a combination of injunctions, calibrated damages, corrective disclosure and fast-track ADR mechanisms.

The framework and embedded articles attempt to find the appropriate balance between legal certainty for industry on one hand and safeguarding of human originality on

the other. It confirms that AI is a tool and not a co-author, protects the moral and cultural value of human works, and ensures that fair remuneration occurs in AI-driven markets. Each article is a direct response to gaps identified in the MATH-COPE matrix, promoting commercial fairness, guiding organisational practices, aligning with international policy, and respecting ethical technology standards.

8. Implementation Pathways: Registries, Provenance, and Redress

8.1. Registries and Permissions

One of the key elements in the operationalisation of any global system is the development of registers for training authorisations. Such registries can be organised on either an opt-in or opt-out basis, thus empowering rights holders to decide whether or not their works can be used for artificial intelligence training. To prevent the breakdown of enforcement mechanisms under prohibitive transaction costs, these registries should implement standardised licensing schemes, including both collective licensing schemes (through, for example, collecting societies) and direct licensing for individual authors. This dualist approach directs the huge range of potentially affected works into legally secure conduits, eliminating the need for separate negotiations for each individual license.

8.2. Provenance and Labelling

Licensing regimes are only effective if works and outputs can be reliably identified. This requires robust metadata that can withstand the transition from platform to platform and distribution chain to distribution chain. Practically, a two-tiered system seems advisable: human-readable labels to directly inform audiences (e.g., "AI-assisted" or "AI-generated") and machine-readable labels that can be automatically detected by platforms, search engines and supervisory authorities. Such standards help to reduce the risks of so-called "compliance theatre," in which symbolic disclosure is given without verifiable provenance.

8.3. Audits and Access

Transparency obligations alone are not enough unless they can be verified. As a result, providers should be required to provide tiered access rights to regulatory authorities. At a basic level, this would involve disclosure of general information about model architectures and dataset categories. At a more secretive level, the regulators should have the ability to audit training logs, model versions and dataset provenance, under strict confidentiality requirements. This provision will allow infringements of licensing conditions and moral rights to be detected and sanctioned, without the developers being required to disclose commercially sensitive information in full.

8.4. Redress and Remedies

For impacted creators and rights holders, an escalating system of remedies is a must. The first level should include fast and reliable notice and action procedures, backed by enforceable (via binding service level agreements, SLAs) procedures for timely removal or correction of infringing content. In exigent circumstances, interim measures such as injunctions or mandatory corrective disclosures should be available. For recurrent/wilful violations, courts and regulators should be empowered to impose calibrated damages reflecting both the actual harm incurred as well as the economic capacity of the infringer. The overarching aim is an effective and proportionate enforcement regime, which does not result in excessive punishment, but does deter malfeasance.

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8.5. Protecting SMEs and Non-Profits

Finally, effective implementation should not provide preferential treatment only to large corporations. SMEs and non-profit research organisations require special protection. Safe-harbour templates are an example of such measures; entities that follow pre-defined licensing and disclosure procedures would be rewarded with reduced liability risks. Audit requirements should also be proportionately tiered based on the size and risk profile of the organisation, so that compliance is still achievable for smaller actors, but robust protection for creators is still maintained. This way, regulation ensures that innovation is encouraged rather than hindered, while ensuring fair competition in the market.

9. Conclusions

The comparative analysis of the United Kingdom, United States, and German copyright systems shows that the current legal frameworks are not sufficient to meet the challenges posed by generative AI. In these jurisdictions, authorship is still limited to human agents, and there are still no clear provisions for works that are co-created with AI. Training data is not regulated, moral rights are not uniformly enforced, and there is no mechanism that provides adequate protection against semantic or stylistic copying of human creativity.

The MATH-COPE framework has revealed convergent gaps in doctrinal analysis, scholarly debate, and stakeholder perspectives. Stakeholders all agreed on the need to position AI as a tool and not a co-author and suggested reforms that would ensure the semantic and syntactic originality of human creators. The draft global framework addresses these concerns in eleven articles that deal with the definition of "work", authorship, licensing and remuneration, moral and post-mortem rights, transparency, and international harmonisation.

However, very significant challenges remain. Jurisdictional enforcement is uncertain, and liability issues, especially those related to platform providers and AI developers, need to be clarified. Moreover, striking the right balance between innovation and protection is a delicate task; overly tight regulations may stifle technological innovation, while overly permissive regulations may undermine the cultural and economic value of works created by humans.

In the future, successful regulation will require international cooperation. Just as the Berne Convention was the element that brought copyright standards together in the nineteenth century, so a concerted effort is necessary today to protect originality, promote equity in digital economies and maintain trust in cultural production. Continued global discussion between law and technology, and the development of common enforcement mechanisms, will be key to the iterative refinement of definitions. In an era in which machines are able to reproduce human expression with unprecedented fidelity, copyright law needs to be recalibrated in order to safeguard not only the economic interests of creators but also the cultural and personal core of human originality.

The proposed semantics-aware definition of "work", along with licensing tiers and stratified transparency, minimises litigation by design and makes interoperable enforcement easier. In practice, this approach helps to mitigate transaction costs in AI development that is compliant with these standards while also helping to retain the cultural and personal value of human originality. The MATH-COPE framework illustrates how future development and reform must go beyond isolated doctrinal solutions and seek systemic change across markets, organisations, policies and technologies. Only by such a comprehensive approach can copyright retain its twin roles as economic regulator and cultural protector in the age of AI.

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