

Generative Artificial Intelligence and Human Creativity: Revisiting the Normative Foundations of Intellectual Property

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Abstract

Generative artificial intelligence (gen-AI) undermines the traditional foundations of intellectual property (IP) law by challenging long-standing assumptions about creative production. Historically, copyright and patent systems were based on identifiable human creators whose work, talent, character, and intentionality deserved legal protection. However, gen-AI systems, which can generate text, images, music, software code, and other creative outputs, complicate these assumptions. This article contends that gen-AI does not raise new doctrinal issues but instead reveals deeper conflicts within the normative underpinnings of IP law. The article proposes a human-centred IP framework that preserves meaningful protection for human creative agency while recognising the collective nature of creativity in technologically mediated societies. Drawing on labour, personality, utilitarian, and democratic culture theories, it demonstrates how AI disrupts the relationship between human creativity and IP protection. The article first examines the philosophical foundations of IP law, then analyses how gen-AI disrupts traditional concepts of authorship, originality, and creative agency, evaluates potential normative responses, and proposes a human-centred framework for regulating technologically mediated creativity.

Keywords

Creative agency, generative artificial intelligence (gen-AI), human creativity, intellectual property (IP), IP theory, jurisprudence.

1. Introduction

Generative artificial intelligence (gen-AI), a branch of artificial intelligence (AI) that employs machine learning models, particularly large-scale neural networks, to create new content such as text, photos, audio, video, computer code or other data, based on patterns discovered in big datasets,¹ has caused a structural disruption in intellectual property (IP) law by challenging its fundamental assumptions about human creativity, authorship and originality. Gen-AI fits into the larger subject of machine learning, which allows computational systems to recognise patterns, make predictions and improve performance

1 Banh, L & Strobel, G 'Generative Artificial Intelligence' (2023) 33 *Electronic Markets* 63.

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by exposing these systems to enormous amounts of data rather than explicitly programming every conceivable outcome.² Gen-AI, an advanced form of machine learning, is primarily built on deep neural networks, particularly transformer-based architectures, that learn relationships from training data and generate new outputs by predicting and combining patterns from existing datasets.³ Therefore, their outputs are the outcome of statistical modelling and computational processes, not human consciousness, intention, or creative experience. This capacity calls into question the legal and philosophical assumptions that creative works result from identifiable human agency. Historically, IP regimes, particularly copyright and patent law, have been founded on the notion that protection is justified by human labour, skill and intellectual effort.⁴ The figure of the ‘author’ has served as a central organising concept, linking creativity to ownership and providing the normative basis for exclusive rights.

However, gen-AI systems complicate this structure by generating outputs through statistical pattern recognition.⁵ This raises the question of whether creativity requires human intervention. At the same time, these systems rely on large datasets derived from previously created human works.⁶ This interdependence complicates the narrative of autonomous machine creativity. As a result, a hybrid creative ecology emerges, with the distinction between original expression and derivative synthesis becoming increasingly difficult to define. Currently, legal responses to gen-AI focus on narrow doctrinal issues such as copyright eligibility, authorship attribution, and infringement based on training

2 Bahn & Strobel *ibid* 63–64.

3 Garon, A ‘The Revolution will be Digitized: Generative AI, Synthetic Media, and the Medium of Disruption’ (2024) 20(1) *Ohio State Technology Law Journal* 139; Bender, S ‘Generative-AI, the Media Industries, and the Disappearance of Human Creative Labour’ (2024) 26(2) *Media Practice and Education* 200; Erickson, K ‘AI and Work in the Creative Industries: Digital Continuity or Discontinuity?’ (2024) 12(1) *Creative Industries Journal* 1; Hsu, G & Bechky, BA ‘Exploring the Digital Undertow: How Generative AI Impacts Social Categorizations in Creative Work’ (2024) 5(3) *Organization Studies* 1; Feuerriegel, S et al ‘Generative AI’ (2023) *Business and Information Systems Engineering* 1.

4 Chatterjee, M ‘Lockean Copyright versus Lockean Property’ (2020) 12 *Journal of Legal Analysis* 136; Duncan, S ‘Labour-Based Justifications of Intellectual Property and the Problem of Disruptive Innovations’ (2020) 37(5) *Journal of Applied Philosophy* 799; Quintais, JP & Hugenholtz, PB ‘Copyright and Artificial Creation: Originality, Authorship and Human Creativity’ (2021) 52 *International Review of Intellectual Property and Competition Law* 1190.

5 Kim, D ‘AI-Generated Inventions: Time to Get the Record Straight?’ (2020) 69(5) *GRUR International* 443; Selvadurai, N ‘Reconsidering Creativity: Copyright Protection for Works Generated Using Artificial Intelligence’ (2020) 15(7) *Journal of Intellectual Property Law and Practice* 536; Salami, E ‘AI-Generated Works and Copyright Law: Towards a Union of Strange Bedfellows’ (2020) 16(2) *Journal of Intellectual Property Law and Practice* 124; Burk, DL ‘AI Patents and the Self-Assembling Machine’ (2020) 105 *Minnesota Law Review* 301; Lorenzoni, I ‘Artificial Intelligence Creates, Invents and Challenges Intellectual Property Law’ (2020) 3(2) *Stockholm Intellectual Property Law Review* 26.

6 Senftleben, M ‘GenAI and the Copyright Three-Step Test – Do TDM Exceptions for AI Training Conflict with a Work’s Normal Exploitation?’ (2026) 75(1) *GRUR International* 1; Leistner, M & Antoine, L ‘TDM and AI Training in the European Union - From “LAION” to Possible Ways Ahead?’ (2025) 74(11) *GRUR International* 1027; Nordemann, JB & Pukas, J ‘Copyright Exceptions for AI Training Data - Will There Be an International Level Playing Field?’ (2022) 17(12) *Journal of Intellectual Property Law and Practice* 973.

data and outputs.⁷ While important, these approaches do not fully address the deeper jurisprudential implications of gen-AI. The underlying challenge is not only whether AI-generated works can be protected, but whether the conceptual foundations of IP remain adequate in an environment where traditional creativity is distributed.

This article argues that gen-AI exposes unresolved tensions within the normative structure of IP law, demonstrating that established justifications based on labour, personality, utility and cultural participation are increasingly strained by algorithmic production. The analysis proceeds on the basis that IP law must now be reconsidered as a framework for regulating not only human authorship but also technologically mediated creativity. The article adds to current scholarship by arguing that gen-AI should not be viewed as causing isolated doctrinal issues for copyright and related IP regimes, but rather as exposing deeper tensions within the normative architecture of IP law itself. It advances the claim that IP law is increasingly shifting from a system organised around single human authorship to one that regulates distributed and technologically mediated forms of creativity.

The article proposes a human-centred framework that aims to preserve meaningful human creative agency while acknowledging the infrastructural and collective dimensions of contemporary creative production.

2. Philosophical foundations of intellectual property

First, legal protection for intellectual creatives has traditionally been based on a series of interlocking philosophical theories that explain why such outputs should be granted exclusive rights. Although these theories differ in emphasis, they all share a common conceptual premise: that creativity stems from identifiable human agency, and that legal entitlement can thus be linked to human intellectual effort, personality, or socially valuable innovation. These justification frameworks have influenced both the normative and doctrinal structures of modern IP systems, particularly regarding authorship, ownership, and exclusive rights. Examining these theories is therefore critical for understanding how gen-AI undermines the conceptual assumptions that have traditionally underpinned IP law.

2.1 Labour theory of property

The labour theory of property, most famously associated with John Locke,⁸ bases its entitlement on the moral significance of productive effort. According to Locke, the world

7 Iaia, M 'To Be, or Not to Be ... Original under Copyright Law, that is (One of) the Main Questions Concerning AI-Produced Works' (2022) 71(9) *GRUR International* 793; Milityna, K 'Human Creative Contribution to AI-Based Output – One Just Can('t) Get Enough' (2023) 72(10) *GRUR International* 939; Engel, A 'Can a Patent Be Granted for an AI-Generated Invention?' (2020) 69(11) *GRUR International* 1123; Kim, D 'AI-Generated Inventions: Time to Get the Record Straight?' (2020) 69(5) *GRUR International* 443; Mukwevho, TD & Oriakhogba, DO 'Situating Liability for Patent Infringement by Artificial Intelligence Systems in South Africa' (2024) 36 *South African Mercantile Law Journal* 41; Nordemann, J & Senftleben, M 'GenAI and Copyright: The Three-Step Test and the Impact of AI Training under EU Law' (2023) 73(11) *GRUR International* 1100; Vrendenburg, C-J 'Towards a Judicial Sustainability Test in Cases Concerning the Enforcement of Intellectual Property Rights' (2023) 72(12) *GRUR International* 1125.

8 Hughes, J 'The Philosophy of Intellectual Property' (1988) 77 *Georgetown Law Journal* 287.

and its resources were once shared by all humanity.⁹ Individuals gain private rights to external resources when they combine their work with them, changing those resources into something to which they have a legitimate moral claim.¹⁰ According to Locke, ‘every man has a property in his own person’, and because labour belongs only to the individual, anything associated with that labour becomes that person’s property.¹¹ This entitlement, however, is not unconditional. Locke defined private appropriation with the well-known caveat that individuals may appropriate only where ‘enough, and as good’ is left for others.¹²

In the context of IP, this justifies the claim that authors and inventors obtain rights by investing intellectual effort, skill and time in creating original works. The theory’s normative appeal stems from its intuitive link between work and reward, which implies that creative and inventive labour is subject to moral desert.¹³ It further supports granting exclusive rights to literary, artistic, and technological outputs based on identifiable acts of human ingenuity.¹⁴ The theory assumes a relatively direct relationship between an individual’s cognitive or physical input and the resulting work, with authorship serving as a proxy for labour contribution. However, even within traditional creative processes, labour was, and remains, collaborative and mediated by tools, institutional infrastructures and cumulative cultural knowledge,¹⁵ raising concerns about how direct the labour–output connection must be for entitlement to exist.

AI-generated outputs rely not only on user prompts but also on the work of programmers, data engineers, annotators, platform designers and a collection of pre-existing works used in training datasets.¹⁶ This diffusion makes it difficult to isolate a single act of labour that can be coherently mapped. As a result, the justification linking individual productive effort to proprietary entitlement is weakened. In these hybrid human–AI contexts, where creative agency is shared between user input and algorithmic processing, the labour theory struggles to explain why ownership should attach and to whom, exposing structural limitations in its explanatory power within modern human–AI collaborative systems.

9 Locke, J *The Works of John Locke* (10 vols) (Thomas Tegg, 1823/1963).

10 See generally Locke *ibid*.

11 Locke, J *Two Treatises of Government* (Peter Laslett ed, Cambridge University Press, 1988).

12 Mukwevho, TD *Developing Strategies for the Protection of Indigenous Knowledge under the Agreement Establishing the African Continental Free Trade Area* (DPhil thesis, University of Venda, 2024) 90.

13 Duncan (note 4) 799–817.

14 Khair, MHM & Hashim, HNM ‘Justifications of Intellectual Property Rights: A Discussion on Locke and Hegel’s Theories’ (2020) 11(2) *Journal Hukum Novelty* 114; Du Bois, M ‘Justificatory Theories for Intellectual Property Viewed through the Constitutional Prism’ (2018) 21 *Potchefstroom Electronic Law Journal* 1.

15 Fricke, B *Creation and Creativity in Medieval Art: Illustrating Genesis* (Routledge 2024).

16 Radeisen, A ‘Open Foundation Models and TDM Exceptions to Copyright – Building Blocks for an AI Ecosystem’ (2026) 75(3) *GRUR International* 224; Mukwevho & Oriakhogba (note 7) 51, 54, 57; Gebru, T et al ‘Datasheets for Datasets’ (2021) 64(12) *Communications of the ACM* 86; Kur, A-F & Klinger, M ‘Artificial Intelligence and Copyright: Authorship, Originality and the Problem of Machine-Generated Works’ (2022) 74(5) *GRUR International* 397; Bender, EM et al ‘On the Dangers of Stochastic Parrots: Can Language Models Be Too Big?’ (2021) *FAccT* 610.

2.2 Personality theory of IP

Personality theory, which is most closely associated with Hegelian and Kantian philosophy,¹⁷ views IP as grounded in the creator's relationship with their expressive output.¹⁸ Accordingly, creative works are viewed as more than just commodities; they are manifestations of personal autonomy, will and self-development.¹⁹ The justification for IP protection, particularly through moral rights, is to preserve the connection between the author's personhood and the work as an externalised form of identity.²⁰ This includes attribution, integrity and preventing the work from being distorted or misrepresented. Furthermore, it protects the non-economic aspects of authorship.²¹

These rights reflect the normative claim that creative works contain traces of the author's dignity and individuality, and thus require legal recognition for reasons beyond utilitarianism. This theory assumes that a human subject has the capacity for intentional expression and reflective agency, allowing creative acts to take on meaning as extensions of oneself.²² As a result, authorship is more than just a technical term; it also represents a normative status based on personal expression.

Gen-AI challenges this because it produces outputs that are not grounded in consciousness, intentionality, or lived experience. From the Hegelian perspective, machine-generated works would lack the constitutive link to personality that justifies moral rights. This presents a conceptual boundary issue in contemporary IP law, particularly in hybrid creative contexts involving human prompts, training data and algorithmic processes. In such cases, attributing personality-based authorship becomes increasingly ambiguous, as the human agent's expressive contribution is diluted or displaced by automated generation, thereby calling into question traditional doctrinal assumptions about personhood or personality.

2.3 Utilitarian and economic incentive theories

Utilitarian theories justify IP primarily as a means of promoting social welfare by encouraging innovation and cultural production.²³ The central claim is that creative and inventive activity requires a significant investment of time, skill, and resources, which would be scarce in the absence of legal mechanisms that ensure temporary exclusivity.²⁴ IP rights are thus viewed as a calibrated incentive structure that seeks to balance private rewards with eventual public access, aligning individual economic motivation with broader societal benefit. This incentive-based model assumes conditions of relative scarcity, in which the production of creative works requires sufficient resources that exclusive rights

17 Du Bois (note 14) 6. See also Hegel, GWF *Elements of the Philosophy of Right* (Cambridge University Press, 1991); Kant, I *The Metaphysics of Morals* (Cambridge University Press 1996).

18 Du Bois *ibid* 24.

19 *Ibid* 24–25.

20 *Ibid* 25–26.

21 *Ibid* 26–27.

22 *Ibid* 24–27.

23 *Ibid*; Ndlovu, L & Saurombe, A 'Theories of Intellectual Property and Access to Medicines in the Southern African Development Community (SADC)' (2016) 37(3) *Obiter* 599.

24 Ndlovu & Saurombe *ibid* 602, 603–604.

significantly influence behavioural choices.²⁵ In such a framework, granting authors and inventors limited monopolies is justified insofar as it encourages the continued generation of socially valuable outputs while ensuring that, after a specified period, those outputs enter the public domain.²⁶ The system's efficiency depends on maintaining a balance between encouraging creation and preventing excessive restrictions on information flows.

Gen-AI undermines these underlying assumptions by dramatically lowering the marginal cost of creating expressive content. Texts, images, and other creative outputs can now be generated at scale with little human effort,²⁷ undermining the traditional link between exclusivity and motivation to create. In this environment of algorithmic abundance, the justification for strict proprietary control becomes less clear, as exclusivity may no longer be required to stimulate production. At the same time, extending or strengthening IP protection for AI-generated outputs risks creating new bottlenecks to access and downstream innovation, especially when such outputs serve as inputs to further machine learning and creative recombination. This creates a structural tension in utilitarian theory, as the optimal balance between incentive and access becomes harder to achieve in an era of automated, low-cost creativity.

2.4 From human-centred justifications to distributed creative systems

When combined, labour and personality theories ground IP in a model in which the individual creator serves as the central normative and analytical reference point. Labour theory assumes that entitlement arises from identifiable acts of productive effort, whereas personality theory bases protection on the expressive linkage between the author and the work as an extension of identity. Although utilitarian theory differs in its justificatory logic, it follows a similar conceptual architecture, assuming that creativity is a scarce, human-centred activity that requires economic incentives to ensure an adequate supply. Across these perspectives, creativity is framed as traceable to discrete human agency and capable of being linked to identifiable acts of intellectual production.

Gen-AI challenges this shared architecture by decoupling creative output from singular authorship and reconfiguring it as a distributed process. Instead of being the direct product of an individual mind, outputs emerge from complex interactions among training data, algorithmic design, computational infrastructure, and user inputs that may be minimal, indirect, or structurally embedded.²⁸ This redistribution of creative causality questions the notion that authorship can be coherently attributed to a single subject or act. As a result, established doctrinal categories struggle to capture the hybrid nature of machine-assisted and machine-generated production, in which human and non-human contributions are inextricably linked, challenging traditional attributional frameworks.

This shift has far-reaching implications for IP law's conceptual foundations, going beyond doctrinal adjustments. It questions the coherence of authorship as both a legal

25 Du Bois (note 14) 22–24.

26 Ibid 22–23.

27 Militsyna (note 7) 946.

28 Chen, Y 'Reviving "Computer-Generated Works": Should Hong Kong Copyright Law Adapt the Rule to Harness AI Opportunities?' (2025) 20(9) *Journal of Intellectual Property Law and Practice* 584; Selvadurai (note 5) 536–543.

status and a philosophical construct, especially when originality and creative input are no longer clearly distinguishable from automated synthesis and generation processes. The following analysis will focus on how gen-AI destabilises traditional notions of authorship, originality, and creative production, and how these disruptions reveal deeper structural tensions within prevailing IP justification theories.

3. Gen-AI and the destabilisation of creative agency

The emergence of gen-AI significantly reshapes the conditions under which creative outputs are produced, distributed and attributed within contemporary legal and cultural systems. From the discussion above, it is clear that generative systems introduce the capacity to produce novel expressive content across textual, visual, auditory and code-based domains. Their outputs emerge from complex interactions among large-scale training datasets, statistical pattern modelling, and user inputs, rather than from direct, singular acts of human intellectual expression. As a result, the relationship between creativity, intention and authorship becomes more indirect and structurally mediated. This development, therefore, challenges the assumption that creative production can be easily traced to identifiable human agency, requiring a reconsideration of the conceptual boundaries between originality, imitation and generation.

3.1 The historical construction of authorship

The concept of authorship is historically contingent rather than universal or obvious. Its modern form emerged alongside the emergence of copyright systems, owing primarily to technological and economic changes associated with print culture.²⁹ In this context, authorship became more closely associated with the Romantic ideal of the individual creator as an autonomous and original genius.³⁰ This idea, which gained popularity in the 18th and 19th centuries, laid the groundwork for exclusive rights by linking creative production to individuality, intentional expression and the perceived uniqueness of the creative mind.

This model of authorship influenced the doctrinal architecture of modern copyright law by emphasising originality as a threshold requirement for protection and establishing the author as the primary locus of rights, particularly copyright.³¹ It also reinforced the conceptual distinction between idea and expression, with legal protection given to the latter as the identifiable manifestation of the author's intellectual labour. However, this framework has long been the subject of critical examination. Structural and post-structural approaches in legal and literary theory have questioned whether authorship can function coherently as a single source of meaning, or whether it should be understood as

29 Beecroft, A 'Beginnings: A World History of Authorship' in Boes, T, Braun, R & Spiers, E (eds) *World Authorship* 18; Woodmansee, M 'The Genius and the Copyright: Economic and Legal Conditions of the Emergence of the "Author"' (1984) 17(4) *Eighteenth-Century Studies* 425.

30 Sangster, M 'Introduction: What Was an Author in the Romantic Period?' in *Living as an Author in the Romantic Period* (Palgrave Macmillan, 2021); Zhou, E & Lee, D 'Generative Artificial Intelligence, Human Creativity, and Art' (2024) 3(3) *PNAS Nexus* 52; Ciorogar, A 'Authorship and Romanticism' (2019) LXIV (4) *Studia UBB Philologia* 231.

31 Dlamini, S *Authorship in Copyright Law: A Critique in the Context of the Fourth Industrial Revolution* (LLM dissertation, University of the Free State, 2023).

a regulatory construct that organises attribution, ownership and interpretative authority within discourse.³²

Within this tradition, authorship is viewed as what Kelaita et al. term ‘the function’ rather than as a natural or originating source of meaning, emphasising its role in classifying, limiting, and controlling the circulation of text within discourse. Similarly, a textual meaning emerges from the interaction of language, culture and readership rather than from authorial intention, culminating in the concept of the ‘death of the author’ as a stabilising figure of interpretation.³³ Gen-AI broadens and intensifies these criticisms by producing outputs that are not anchored in any stable author-function, further decoupling expressive works from identifiable human intentionality. As a result, it places additional strain on legal frameworks that still rely on authorship as a fundamental organising principle of IP.

While the discussion above focused on authorship in copyright law, patent law has faced a similar challenge regarding inventorship. Historically, patent regimes have assumed that inventions come from identifiable human inventors who use imaginative ingenuity.³⁴ This premise was explicitly tested in the DABUS disputes,³⁵ in which Stephen Thaler sought patent protection for inventions naming the AI system DABUS as the inventor. Although South Africa accepted a patent application naming DABUS as the inventor (Patent No. 2021/03242), courts in the United Kingdom and Australia rejected this position, arguing that patent law envisions an inventor as a natural person rather than an autonomous AI system.³⁶

3.2 Originality and statistical creativity

Originality is defined as the requirement that something originate with an individual and not be based on pre-existing domains.³⁷ In IP doctrinal terms, however, this standard is typically expressed in a relatively low-threshold form, particularly in copyright systems,

32 Adams, Z & Grosse Ruse-Khan, H ‘Work and Works on Digital Platforms in Capitalism: Conceptual and Regulatory Challenges for Labour and Copyright Law’ (2020) 28(4) *International Journal of Law and Information Technology* 329; Khan, R & Gotora, N ‘One (Innovation) Flew over the Law’s Head: The Intersection of Artificial Intelligence and Copyright’ (2023) 11 *South African Intellectual Property Law Journal* 72; Nicholson, D ‘The South African Copyright Law: A Historical Overview and Challenges to Address Access to Knowledge Issues in a Country in Transformation’ (2015) *IFLA WLIC Proceedings* 1; Davis, C, Dick, A & Le Roux, E ‘Introduction: Print Culture in Southern Africa’ (2018) 44(3) *Journal of Southern African Studies* 377.

33 Almujaalli, H ‘Author, Text, and Writing: Roland Barthes and “The Death of the Author”’ (2023) 48 *Journal of the College of Languages* 1.

34 Villegas Tovar, R & Pinto Avendaño, D ‘Reconceptualizing Inventorship: Addressing the Challenge of Artificial Intelligence-Generated Inventions’ (2025) 5 *AI and Ethics* 4475.

35 These disputes have emerged across multiple jurisdictions, including Australia, the United Kingdom and the United States, where courts and patent offices have considered whether existing patent frameworks permit recognition of AI systems as inventors.

36 See generally *Thaler v Commissioner of Patents* [2021] FCA 879 (Australia); *Commissioner of Patents v Thaler* [2022] FCAFC 62 (Australia); *Thaler v Comptroller-General of Patents, Trade Marks and Designs* [2021] EWCA Civ 1374 (England and Wales); *Thaler v Comptroller-General of Patents, Designs and Trade Marks* [2023] UKSC 49 (United Kingdom); and Thaler’s DABUS-related patent applications before the United States Patent and Trademark Office (USPTO).

37 Gama, MFI *A Comparative Analysis of the Doctrine of Originality in the Copyright Law of South Africa and the United States of America* (LLM dissertation, University of Johannesburg, 2020).

where originality is met by independent creation combined with a degree of skill, labour or judgement.³⁸ Despite its apparent simplicity, this requirement has always been conceptually unstable because it does not require novelty in the strict sense used in patent law, but rather a demonstrable absence of direct copying.

From both theoretical and observational standpoints, human creativity rarely conforms to a model of absolute originality. Prior exposure to language, culture and existing expressive forms shapes cognitive processes inextricably.³⁹ With memory, imitation and recombination all being components of creative production, what is legally recognised as 'original' should be understood as a structured reconfiguration of pre-existing materials rather than the creation of entirely novel content from scratch. Originality, in this view, serves as a normative threshold that distinguishes permissible derivation from unlawful appropriation rather than an ontological claim about pure creation.

Gen-AI production models complicate this concept by generating outputs based on large-scale statistical modelling of patterns embedded in training datasets. These systems create new expressions by predicting and recombining probabilistic relationships between linguistic or visual elements, rather than through intentional mental activity.⁴⁰ Although the underlying mechanism differs fundamentally from human cognition in terms of consciousness and agency, the resulting outputs are similar to recombinatory processes acting on prior material. The resulting difficulty is not that human and machine creativity become identical, but that the legal framework presumes a model of authorship centred on identifiable human intention and control.⁴¹ Gen-AI exposes the limitations of that assumption by demonstrating that culturally valuable expression can emerge through distributed computational processes that do not fit traditional categories of authorship.

Another problem for IP law, therefore, is not merely doctrinal classification, but whether existing concepts of originality and authorship remain capable of organising creative production in increasingly hybrid human-machine environments. This tension in IP law is resolved not by equating human and machine creativity, which remain distinct in terms of agency and normative status, but rather by acknowledging that the legal category

38 In the context of South Africa, see the definition of copyright in s 1 of the Copyright Act, and as defined in *Payen Components South Africa Ltd v Bovis Gaskets CC and Others* 1995 (4) SA 441 (A) and *Galago Publishers (Pty) Ltd and Another v Erasmus* [1988] ZASCA 131.

39 Bein, O, Reggev, N & Maril, A 'Prior Knowledge Promotes Hippocampal Separation but Cortical Assimilation in the Left Inferior Frontal Gyrus' (2020) 11 *Nature Communications* 4590; Bessi  res, B et al 'Early Life Experiences, Selectively Mature Learning and Memory Abilities' (2020) 11 *Nature Communications* 628.

40 Grindrod, J 'Large Language Models and Linguistic Intentionality' (2024) 204 *Synthese* 1; Heersmink, R, De Rooij, B & Clavel V  zquez, MJ 'A Phenomenology and Epistemology of Large Language Models: Transparency, Trust, and Trustworthiness' (2024) 26 *Ethics and Information Technology* 1; Feuerriegel, S, Hartmann, J, Janiesch, C & Zschech, P 'Generative AI' (2024) 66 *Business and Information Systems Engineering* 111.

41 Mehta, S & Kaur, G 'Exploring Copyright in the AI Era: Evaluating Authorship and Ownership of AI Generated Content With ChatGPT' in Bhattacharya, A, Dutta, S, Dutta, P & Rocha, A (eds) *Data Mining and Information Security* (Springer, 2026) 2037; Stockton-Brown, M 'Inking Cultures, Authorship, AI Generated Art and Copyright Law in Tattooing' (2023) 36 *International Journal for the Semiotics of Law* 2037; Guadu, A & Dibekulu, D 'From Barthes to Algorithms: Reimagining Authorship and Reader Agency in the AI Era' (2026) 6 *AI and Ethics* 1.

of originality may lack sufficient granularity to account for algorithmically generated production. If originality is defined as a departure from previous works rather than absolute novelty, then both human and AI-generated outputs may exist on a spectrum of variation.

This raises a question about whether current originality standards can meaningfully distinguish authorship in environments where creative output is increasingly mediated by computer systems.

3.3 AI training data and extractive creative economies

Gen-AI systems are trained on large datasets of human-created texts, images, music and code, which are frequently sourced from publicly available or copyrighted materials.⁴² This process raises important legal and normative issues about consent, compensation and attribution. While some approaches view training as akin to human learning or as a justifiable limitation, others see it as a large-scale extraction of cultural labour. The learning analogy assumes that AI systems engage in a process similar to human cognitive development,⁴³ thus justifying the use of existing works as non-expressive inputs. However, Ding and Li argue that AI lacks human creative abilities.⁴⁴ On the other hand, infringement-based perspectives emphasise the reproduction and transformation of protected material without authorisation.⁴⁵ Lastly, commons-based approaches contend that cultural knowledge should be freely available for transformative innovation.⁴⁶

These differing interpretations reflect a deeper ambiguity about the legal status of cultural data in computational systems. What is at stake is not only the legality of specific practices but also the broader transformation of culture into structured inputs for

42 Bannor, GA, Boateng, FO & Arthur, YD 'Effects of Ethics Regulations and Training Regarding Responsible AI Use on Continued Use Intentions of Gen AI Chatbots: Structural Equation Model of University Students Perceptions' (2025) 5 *AI and Ethics* 5011; McIntyre, JH 'The Right to Restrict AI Training' (2026) 39(25) *Philosophy and Technology* 1; Bozenhard, J 'Inspirational Responsibility: Intellectual Property and AI Training' (2026) 39(88) *Philosophy and Technology* 1; Scala, F, Flesca, S & Pontieri, L 'An Efficient Model Training Framework for Green AI' (2025) 114(275) *Machine Learning* 1.

43 Odegard, TN & Gierka, MV 'The Science of Reading Meets the Science of Learning: Memory Systems, Structured Literacy and the Role of AI' (2026) 76 *Annals of Dyslexia* 1; Davis, N, Clemens, M, Rezwana, J & Browne, E 'Human-AI Co-Creation: A New Interaction Paradigm for Human-AI Interaction' in *Handbook of Human-Centered Artificial Intelligence* (2026) 833.

44 Ding, AW & Li, S 'Generative AI Lacks the Human Creativity to Achieve Scientific Discovery from Scratch' (2025) 15 *Scientific Reports* 9587 1.

45 Cheng, L 'Copyright Infringement Liability and Risk Prevention in the Application Process of Generative AI' in *Copyright Issues Related to Generative Artificial Intelligence (AI)* (Springer 2026); Miggels, A 'The Implementation of the Fair Use Exception into South African Copyright Law in the Age of Artificial Intelligence: A Fever Dream or a Justified Reform?' (2025) 13(2) *South African Intellectual Property Law Journal* 45; Mikioni, T *Examining Copyright Infringement and Liability in Generative Artificial Intelligence Training and Use: A Legal Perspective in South Africa and Beyond* (LLM dissertation, University of Cape Town, 2025); Mukwevho & Oriakhogba (note 5).

46 Mahr, D & Dickel, S 'Rethinking Intellectual Property Rights and Commons-Based Peer Production in Times of Crisis: The Case of COVID-19 and 3D Printed Medical Devices' (2020) 15 *Journal of Intellectual Property Law and Practice* 711; Javed G et al 'Protection of Traditional Health Knowledge: International Negotiations, National Priorities and Knowledge Commons' (2020) 6(1) *Society and Culture in South Asia* 98.

machine learning. This shift repurposes creative works as infrastructural resources in AI development pipelines, altering their normative and economic importance.

3.4 Scarcity, abundance and the reconfiguration of creative value

Traditional IP systems are built on the concept of scarcity, where creative works are assumed to require significant investments of time, skill and cognitive effort;⁴⁷ thus, legal exclusivity is justified as a mechanism to ensure that such investments are adequately rewarded.⁴⁸ Scarcity serves both normative and economic purposes in this framework. Normatively, it supports the claim that creators should be compensated for engaging in costly productive activities.⁴⁹ Economically, it maintains the value of works by limiting supply, allowing expressive goods markets to function through controlled access and differentiated prices.⁵⁰

As noted earlier, gen-AI undermines this scarcity-based architecture by enabling the large-scale production of expressive outputs at very low marginal cost.⁵¹ Furthermore, it has been highlighted that textual, visual and auditory works can now be produced almost instantly, with little direct human labour required per output.⁵² This change does not eliminate the need for underlying infrastructure investments such as model training, data curation and computational resources, but it does significantly decouple the act of generation from traditional notions of creative effort. In such a scenario, exclusivity no longer serves as a traditional reward for production, but rather as a mechanism for regulating access, managing quality signals and consolidating control over distribution channels and platform ecosystems.

This transformation raises a more fundamental theoretical question about the nature of creative value under conditions of algorithmic abundance. If expressive outputs become effectively non-scarce, their individual economic and cultural significance may diminish relative to the systems that produce, filter and organise them. IP may thus shift in functional orientation, from governing discrete acts of creation to structuring the infrastructural environments in which creation takes place. According to this viewpoint, value is gradually shifting from individual works to the computational and institutional architectures that enable their continuous creation, curation and circulation, thereby reconfiguring the object of legal protection itself.

47 Romeiro, HJ 'Intellectual Property History and Theories' in *The Privatisation of Knowledge* (Palgrave Macmillan 2025) 91.

48 Gamrot, W 'Labor as the Basis for Intellectual Property Rights: Against Cwik' (2026) *Philosophy of Management* 1; Signoretta, C 'Cracking the Walls of IPRs when Territorial Restrictions Become Abusive under IP Law' (2025) 56 *International Review of Intellectual Property and Competition Law* 246; Georgiou, O, Maksymenko, M & Russo, S 'IP Considerations' in *R&D Management and Technology Commercialization: Management For Professionals* (Springer, 2025) 231.

49 Clement-Jones, LT 'AI and IP: Rewarding Human Creativity' in Rangeley, M & Fairfax, N (eds) *The Artificial Intelligence Revolution* (Springer, 2026) 461.

50 Hall, BH & Helmers, C *The Economics of Innovation and Intellectual Property* (Oxford Academic, 2024); Grindrod, J 'Large Language Models and Linguistic Intentionality' (2024) 204 *Synthese* 1; Heersmink et al (note 41); Feuerriegel et al (note 41).

51 See generally note 34.

52 See generally notes 2, 23.

3.5 Fragmentation of creative agency

Throughout these developments, a consistent structural pattern emerges: creative agency is no longer coherently located in a single, unified human subject. Instead, it is spread across diverse contribution networks that include software developers who design and refine models, dataset curators who assemble and preprocess training bodies, end users who generate prompts and iteratively shape outputs, and algorithmic systems that mediate and transform inputs into final expressive forms. Within this configuration, creative outputs emerge less as direct expressions of individual intention and more as the result of systemic interaction, with agency distributed across multiple layers of technological and human involvement.

This fragmentation of agency places significant strain on core doctrinal assumptions in IP law, particularly those that rely on identifying a distinct authorial origin. This article highlights that the traditional frameworks of authorship, originality and ownership assume that creative works can be traced back to a specific source of intellectual input, even if collaboration is involved.⁵³ However, in computationally mediated production environments, the causal chain between input and output becomes more opaque and non-linear, making it difficult to assign legal responsibility or entitlement in a clear and conceptually stable manner.

As creative processes become increasingly embedded in algorithmic infrastructures, IP law faces a fundamental challenge: how to conceptualise agency in contexts where production is both human-directed and machine-mediated. This requires a shift away from binary distinctions between author and tool and towards a more nuanced understanding of distributed creativity that accommodates layered forms of contribution without eliminating the normative function of authorship. The analysis that follows shifts from diagnosing these conceptual disruptions to considering possible normative and doctrinal responses, particularly how IP law might be recalibrated to recognise distributed creativity while still preserving meaningful protection for human creative agency.

4. Reimagining IP beyond the human author

The disruption of authorship, originality and creative agency caused by gen-AI requires a reconsideration of how IP law should structure rights, incentives and access. Existing legal responses primarily oscillate between extending traditional copyright frameworks to AI-generated outputs and denying protection to machine-generated works. Both approaches still rest on inherited assumptions about individual authorship and scarcity, rendering them ill-suited to address the systemic transformation of creativity brought about by AI technologies.

4.1 Expanded protection and licensing models

Proposals for collective licensing systems, mandatory remuneration schemes for the use of training data, and royalty-based frameworks for AI-generated outputs have been proposed in response to existing IP structures.⁵⁴ The underlying logic is that, because gen-AI systems

⁵³ See generally section 3 of this article.

⁵⁴ Wagner, M 'From Free to Fee Antitrust: Implications of AI Training Data Licensing after Bartz and Kadrey in the Northern District of California' (2026) *Journal of European Competition Law and Practice* ipag024; Llopis, A & Vonortas, N 'The Bell Inequality: Applying the Lessons of Compulsory Licensing to AI/ML and the Big 5' (2025) *Journal of Technology Transfer* 1.

rely on large volumes of human-created works, rights-holders should receive compensation for their material contribution.⁵⁵

While these approaches maintain continuity with existing proprietary frameworks, they raise significant structural concerns. First, they risk reinforcing the dominance of large technology firms that are best positioned to absorb licensing costs and manage complex compliance systems.⁵⁶ Second, they may introduce significant transaction costs that undermine the scalability and efficiency of AI development.⁵⁷ Third, they may reassert ownership over cultural material in ways that may further limit access to knowledge and innovation. As a result, expanded protection models tend to address distributive concerns while overlooking the more fundamental conceptual issue of how to attribute creativity in distributed computational systems.

4.2 Open access and commons-based approaches

In contrast, a more open response advocates for reduced IP protection, expanded public-domain access, and commons-based models of cultural and technological development.⁵⁸ In this view, gen-AI could be viewed as part of a larger ecosystem of cumulative knowledge production, where restricting access to training data and outputs would stifle innovation and democratic participation.⁵⁹

Open access approaches, rooted in free culture and open-source software development, view creativity as socially embedded and cumulative, challenging proprietary claims over data and algorithms.⁶⁰ The absence of meaningful protection mechanisms for this data, however, may undermine incentives for long-term human creative labour, particularly in the professional artistic and cultural sectors.⁶¹ Furthermore, open systems may still be shaped by underlying asymmetries in computational resources, implying that formal openness does not always translate into equal participation or control.⁶²

55 Wu, H 'Copyright Protection during the Training Stage of Generative AI: Industry-Oriented U.S. Law, Rights-Oriented EU Law, and Fair Remuneration Rights for Generative AI Training under the UN's International Governance Regime for AI' (2024) 55 *Computer Law and Security Review* 106056; Senftleben, M 'Generative AI and Author Remuneration' (2023) 54 *IIC – International Review of Intellectual Property and Competition Law* 1535.

56 Samuelson, P 'Assessing the Feasibility of Collective Licensing of In-Copyright Works as Training Data for Generative AI Systems' (2026) 123 *Proceedings of the National Academy of Sciences* e2509769122.

57 Gans, JS 'Copyright Policy Options for Generative Artificial Intelligence' (2026) 69 *Journal of Law and Economics* 1.

58 Samuelson, P 'Generative AI Meets Copyright' (2023) 38 *Berkeley Technology Law Journal* 1365; Gervais, D 'The Machine as Author' (2020) 105 *Iowa Law Review* 2053; Abbott, R 'I Think, Therefore I Invent: Creative Computers and the Future of Patent Law' (2016) 57 *Boston College Law Review* 1079.

59 See generally Samuelson *ibid*, Gervais *ibid* and Abbott *ibid*.

60 Zong, N 'Creativity Beyond Mind from Pluralism to Unification' (2026) *Phenomenology and the Cognitive Sciences* 1; Oliveira, P 'Impressions of Open Source' in Oliveira, P (ed) *Diversifying Open Source* 31.

61 Parra-Pennefather, P 'AI and the Future of Creative Work' in *Creative Prototyping with Generative AI: Design Thinking* (Apress 2023) 387.

62 Kalluri, P 'Don't Ask if Artificial Intelligence is Good or Fair, Ask How it Shifts Power' (2020) 587 *Nature* 169.

4.3 Human-centred IP framework

A third approach seeks to maintain IP protection while shifting the normative focus to human creative agency. Rather than treating all generative system outputs as equal, this framework distinguishes between human-authored, AI-assisted and AI-generated content, with legal protection prioritising meaningful human creative input.⁶³ In this model, originality is redefined to require a demonstrable human intellectual contribution, even when AI tools are used in the creative process.⁶⁴ This allows for the protection of works in which AI acts as an instrument rather than as an autonomous creator, while excluding purely machine-generated outputs from full proprietary status.

This approach seeks to maintain coherence with personality-based and labour-based theories of IP. This is because it maintains the normative relationship between IP protection and human creative agency.⁶⁵ From a labour theory standpoint, protection is appropriate if a human has committed intellectual effort, skill, judgement and creative labour in producing an output,⁶⁶ even when AI serves as a helping tool. According to personality theory, protection is still associated with the manifestation of human personality, intention and autonomous creative choices, rather than products made without human authorship or personal expression.⁶⁷

The human involvement aspect of this model does not, however, require that every aspect of a work originate exclusively from human cognition; rather, it requires demonstrable human intellectual control over the creative process.⁶⁸ Relevant considerations may include the formulation of expressive prompts, iterative refinement and selection of outputs, editorial modification, aesthetic judgement, and the extent to which the final work reflects intentional human direction rather than autonomous generation by the system. Under this approach, the decisive issue is not the mere use of AI tools, but whether the human participant exercised sufficient creative agency to justify attribution and legal protection.⁶⁹

A human-centred framework therefore implies additional regulatory mechanisms beyond traditional copyright categories. These could include attribution rights for people whose works are used in training datasets, transparency requirements for AI developers regarding the data sources used, and potential compensation systems for large-scale cultural incorporation. The goal is not to exclude AI-generated creativity from legal consideration, but rather to ensure that human creative agency remains normatively central to IP structures.

63 Ginsburg, JC & Budiardjo, LA 'Authors and Machines' (2019) 34(2) *Berkeley Technology Law Journal* 343.

64 See Ginsburg & Budiardjo *ibid*, particularly Part III at 396–438.

65 Bonadio, E et al 'Artificial Intelligence as Inventor: Exploring the Consequences for Patent Law' (2021) 1 *Intellectual Property Quarterly* 48.

66 Frosio, G 'Should We Ban AI-Generated Works? Rethinking Copyright Protection in the Age of Artificial Intelligence' (2023) 18 *Journal of Intellectual Property Law and Practice* 1.

67 Guadamuz, A 'Artificial Intelligence and Copyright' in Edwards, E et al (eds) *Law, Policy, and the Internet* (Bloomsbury Academic 2026).

68 See generally Ginsburg & Budiardjo (note 64).

69 See generally *ibid*.

4.4 From creative works to infrastructure control

Another dimension of reconfiguration is the shifting object of IP disputes. As indicated throughout this article, IP law has historically focused on individual works, such as books, inventions, and artistic expressions. However, in the context of gen-AI, legal and economic power is increasingly associated with control of infrastructure rather than with discrete outputs. The most important forms of control today are ownership of training datasets, access to computational infrastructure, and governance of platform ecosystems. These infrastructural layers influence not only what can be generated, but also how cultural and informational systems are organised. As a result, IP conflicts are shifting away from authorship issues and toward technological governance and data control.

This shift suggests that IP law is undergoing a functional transformation. Rather than focusing solely on creative expression, it is increasingly part of a larger regime governing digital infrastructure, data collection, and platform power. This development raises concerns about whether traditional IP categories are still adequate for addressing the political economy of gen-AI.

4.5 Reassessing the normative function of IP

So far, the regulatory remedies considered have remained conceptually tied to an IP architecture that assumes innovation is anchored in discrete, human-centred acts of production. Whether by enhancing proprietary entitlements, expanding access-based models or fine-tuning human-centred protection levels, each method implicitly maintains authorship as the key reference point of legal organisation. This stabilising assumption, however, becomes increasingly difficult to maintain once creative output is understood as the result of layered socio-technical processes in which agency is distributed across users, datasets and computational infrastructures rather than concentrated in a single creative subject.

This misalignment implies that the main challenge is not just regulating gen-AI products but rather the lack of a cohesive explanation of what IP is normatively for in the context of algorithmically mediated production. The justifications currently in place oscillate between encouraging individual invention and promoting public access, but neither pole adequately captures the structural shift in how expressive value is created and maintained. Therefore, the criteria by which creativity is normatively identified and arranged within legal systems that can no longer rely on the assumption of singular authorship as their basic unit are the more urgent issue.

As a result, IP's normative role must be recalibrated, not by abandoning the individual-centred underpinnings of IP, but by acknowledging that contemporary creativity increasingly occurs within distributed socio-technical systems. Traditional IP frameworks typically identify a single author or inventor as the proprietor of enforceable rights because the creative or inventive contribution is thought to emanate from a specific human source. Gen-AI complicates this assumption by introducing numerous levels of human engagement, including model developers, dataset curators, system operators, users, and individuals whose work is included in the training dataset. Recognising the distributed character of AI-assisted creation, however, does not always justify granting ownership

rights to all participants in the production chain. Such an approach would result in fragmented entitlement systems, undermining the practical aims of IP protection. Instead, the key question should be whether a human actor demonstrated significant creative or inventive agency sufficient to warrant legal recognition.

This approach also rejects the notion that AI systems should be viewed as autonomous legal entities capable of exercising IP rights. Although gen-AI systems produce results through complicated computational processes, they are still technological instruments rather than independent legal beings with interests, goals or personalities. The difficulty for IP law is defining how human contributions to AI-mediated output should be recognised and governed. Therefore, legal protection should continue to be granted to human creators and inventors whose intellectual judgement, selection, modification or direction constitutes a meaningful contribution, while other actors' contributions can be addressed through contractual, licensing, remuneration or governance mechanisms.

5. Conclusion

Gen-AI challenges the theoretical underpinnings of IP law. Although justificatory theories vary across labour, personality and utilitarian perspectives, established doctrines of authorship, originality and creative agency assume that expressive outputs can be linked to identifiable human intention and effort. This idea is challenged by machine-generated expression, which decouples creativity from a single authorial subject and embeds it within distributed socio-technical systems that generate culturally readable outputs through computational processes trained on large, diverse datasets. While existing responses, ranging from expanded proprietary protection and licensing mechanisms to open-access models and human-centred recalibrations, offer some normative and practical adjustments, they remain conceptually anchored in the individual creator, failing to account for the structural transformation of creativity itself.

A more fundamental point is that IP law must be reconsidered at the level of its justification architecture rather than its doctrinal surface. Contemporary creative production is increasingly shaped by the interaction of human judgement, algorithmic mediation and infrastructural control, undermining the traditional separation between creation, transmission and reproduction, as well as the assumption that value can be coherently located in discrete acts of authorship. This evolution shifts the focus from isolated works to the conditions that enable and organise creativity, such as data regimes, computing resources, and platform governance. On this basis, the normative task is not only to determine how existing categories can accommodate AI-generated outputs, but also to rearticulate what IP is ultimately for in a context where creativity is no longer an exclusively human attribute but rather the result of intertwined technological and cultural systems.

How to cite:

Mukwevho, T.D. 'Generative Artificial Intelligence and Human Creativity: Revisiting the Normative Foundations of Intellectual Property' (2026) 6 *Turf Law Journal* 1-16.