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Intent, control and creative freedom in AI-Supported Output: Lessons from Photography

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Abstract

The advancements achieved by generative AI have marked a significant step in creative art, raising copyright law questions, particularly around issues of authorship, originality and the role of AI in the creative process. Copyright law has grappled with similar challenges before, especially with the advent of emerging technologies, as evidenced during the early days of photography. Just as photography was initially viewed as the product of a machine rather than a human creation, so is output created with the support of generative AI often seen as predominantly AI driven. By drawing an analogy with the camera, this article explores how the users' expression of free and creative choices, a fundamental aspect of originality under EU copyright law, can be identified at various stages in the production process of AI-supported output. It argues that the stage of 'taking a photograph' encompasses a series of human decisions rather than being an isolated act of pressing the shutter. Similarly, if the execution stage is seen as a process of converting users' decisions into a preliminary output—much like 'shooting a photograph'—those decisions can also serve as an additional element for attributing originality to AI-supported

outputs. In analysing the emerging standards of authorial intent and control in assessing originality for AI-supported outputs, the article explores the distinction between semantic and categorial intentions, as well as the interplay between intent, control and the predictability of the outcome. It concludes that since categorial intent is always achieved and therefore infallible, the AI-supported output will consistently align with the author's conception or fundamental approach to the work. Moreover, while authorial control and intent alone cannot establish originality, they can nonetheless contribute to assessing the originality of AI-supported output when they are evident in the creative process or its outcomes.

Keywords

Copyright; generative AI; originality; authorial intent; authorial control

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1 Introduction

Artists have long used various tools to enhance their creativity, from visual effects software in filmmaking to digital painting applications. However, the recent development in generative AI represents a fundamental change in terms of creative tools used by artists, especially in view of the scale and speed at which it is used. Generative AI, understood as large language models that, based on users' inputs known as 'prompts', create output, such as text, images, music, computer programs or videos.¹ These models learn and improve both from the large amounts of pre-existing data and from the interactions with users to generate new content (text, visual or audio).² Unlike conventional assisting tools of creation, the lack of transparency and understanding³ about how generative AI processes users' input and arrives at the final outcome⁴ prompts questions on whether this new form of creation can still be assessed under the traditional copyright framework.

¹ Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (Artificial Intelligence Act), PE/24/2024/REV/1 [2024] OJ L 2024/1689 ('AI Act'), Recital 98.

² Examples of generative AI include OpenAI's ChatGPT (generative pre-trained transformer) content creator, DALL-E, Stable Diffusion or Deep Dream image/video generators, Suno AI, AIVA, OpenAI's MuseNet or Google's Magenta music generators. Some of these generative AIs are not just limited to generating text, sound or image, but are multimodal generators.

³ Maria Iglesias Portela, Sheron Shamulia and Amanda Anderberg, 'Intellectual Property and Artificial Intelligence – A literature review', JRC119102 (*Publications Office of the European Union*, 16 December 2019), 21 <<https://publications.jrc.ec.europa.eu/repository/handle/JRC119102>> accessed 8 September 2025.

⁴ See *infra* n64 and n70 where an AI system is defined as a machine-based system that 'infers, from the input it receives, how to generate outputs such as predictions'. However, since AI systems do not publish their embedding of algorithms, how the algorithm predicts or generates outputs is a non-transparent process.

This is not however the first time that copyright law struggled with an innovative technology.⁵ When photography was invented in the nineteenth century, it was not regarded as a work created by an author, but a work created by a machine.⁶ The controversy sparked by photography in terms of originality and authorship came at a time when copyright law was not equipped to answer these questions.⁷ The scepticism surrounding the intervention of a non-living agent in the creative process, as seen in the early debates around photography,⁸ now becomes a concern with generative AI. The purpose of this article is to illustrate that the concerns surrounding the dominance of a non-living intermediary in the execution stage of the creative process are not warranted and should not hinder the originality of output created by users with the support of generative AI ('AI-supported output'). It argues that sufficient free and creative choices (also referred in this article as 'creative freedom') is manifested in the production process, going beyond the users' initial prompting such that the AI-supported output can adhere to the standards of originality outlined in the existing European Union directives and jurisprudence ('EU copyright law'). Additionally, this article determines whether the emerging standards of authorial intent and control should be considered when assessing originality of AI-supported output and concludes that these two elements, although not

⁵ Annemarie Bridy, 'Coding Creativity: Copyright and the Artificially Intelligent Author' (2012) 5 Stanford Technology Law Review 1, 24.

⁶ Christine Haight Farley, 'The Lingering Effects of Copyright's Response to the Invention of Photography' (2004) 65 (3) University of Pittsburgh Law Review 385. See also *Burrow-Giles Lithographic Company v. Sarony*, 111 U.S. 53 (1884), where the arguments against authorship of photography were that the photographer does not create the resulting image, but the camera does.

⁷ Justin Hughes, 'The Photographer's Copyright-Photograph As Art, Photograph As Database' (2012) 25(2) Harvard Journal of Law and Technology 339, 341.

⁸ Diarmuid Costello and Margaret Iversen, quoting Andre Balzin in 'Introduction: Photography between Art History and Philosophy' (2012) 38(4) Critical Inquiry 679, 684.

dispositive of originality, complement the assessment of originality when they are evident in the creative process or its outcomes.

2 The evolution of photography: from mechanical process to work of art

The recognition of photography as a form of artistic expression deserving copyright protection has evolved alongside technological development⁹ and judicial rulings on intellectual property.¹⁰ In the second half of the nineteenth century, photographs in Europe were largely viewed as either a tool for illegal reproduction or a mechanical process, lacking the creativity of traditional art forms, with photographers relying on light and a mechanical and independent agent - the camera - to complete the process.¹¹ Photographs were granted or proposed for copyright protection in the 1860s initially in France,¹² UK,¹³ and

⁹ Thomas Margoni, 'The digitisation of cultural heritage: originality, derivative works and (non) original photographs' (*Institute for Information Law, University of Amsterdam*, 2014) <<https://www.ivir.nl/publicaties/download/1507.pdf>> accessed 8 September 2025.

¹⁰ *Betbéder et Schwalbé v. Mayer et Pierson*, *Cour de Cassation*, 21 November 1862, Dalloz 1863.1.52, where the judges of the Paris Cour de Cassation ruled against the absolute rejection of the application of the 1793 French Literary and Artistic Property Act to photography. The rationale behind this rejection was that, while a photograph may be seen as a mechanical product, it is also the result of the author's choices of, for instance, lighting and angles. See also the *Painer* judgment (2011) relating to photographic portraits, *infra* n41, and the *Camard v. Artprice* judgment (2013), *infra* n53. See also *infra* n12-14 and n30-34.

¹¹ See for instance *Betbéder et Schwalbé* (n10). See also Frédéric Rideau, 'Commentary on the Court of Cassation on photography (1862)' in Lionel Bently and Martin Kretschmer (eds.), *Primary Sources on Copyright (1450-1900)* (2008) <https://www.copyrighthistory.org/cam/tools/request/showRecord.php?id=commentary_f_1862> accessed 8 September 2025.

¹² The Paris Cour de Cassation recognised copyright protection for photographs in 1862 in *Betbéder et Schwalbé* (n10), although they were expressly included in the French Property Law Code only in 1957 (Article 3 of Loi n°57-298 du 11 mars 1957 sur la propriété littéraire et artistique).

¹³ The UK Fine Art Copyright Act of 1862 introduced copyright protection for three types of artistic work, namely original drawings, paintings, and photographs. See also Ronan Deazley, 'Commentary on Fine Arts Copyright Act 1862' in Lionel Bently and Martin Kretschmer (eds.), *Primary Sources on Copyright (1450-1900)* (2008), available at

Germany,¹⁴ almost two decades after photography was invented.¹⁵ The documentation of travel, particularly to remote and challenging locations,¹⁶ along with the documentation of war, has also played a significant role in establishing photographs as artistic works. This recognition has led to their protection in some jurisdictions in Europe, especially in Germany and the UK.¹⁷ However, it was the Court judgments that ultimately set the contours of copyright protection for photography,¹⁸ such as the French Court of Cassation, which acknowledged the photographer's personal contribution through choices like subject, lighting, and timing as essential to the artistic value of the photograph.¹⁹

As technology advanced, the camera came to be viewed as a tool that supported the photographer,²⁰ allowing for creative choices in areas such as shading, angle, framing, and post-developing techniques. In the late nineteenth century, the invention of the Kodak camera led to a shift towards more casual shots, making photography accessible to the masses.²¹ The shift from analogue to

<https://copyrighthistory.org/cam/tools/request/showRecord.php?id=commentary_uk_1862> accessed 8 September 2025.

¹⁴ The 1864 Frankfurt Draft for a law to protect copyrights to literary products and works of art (*Entwurf eines Gesetzes zum Schutze des Urheberrechte an literarischen Erzeugnissen und Werken der Kunst*) introduced a specific provision to the 1857 draft for a copyright statute for the German Confederation (enacted in 1876), foreseeing protection for a photographic production 'provided that it can be regarded as a work of art' ('...dass dasselbe als Werk der Kunst zu betrachten ist'). The Frankfurt Draft is included in Hermann Theodor Schletter, *Jahrbücher der Deutschen Rechtswissenschaft und Gesetzgebung: X. Band* (Verlag Von Ferdinand Enke 1864), 248 et seq., Sec.28; See also Friedemann Kawohl, 'Commentary on Copyright Acts for the German Empire regarding works of art, photography, and designs, Berlin (1876)' in Lionel Bently and Martin Kretschmer (eds.), *Primary Sources on Copyright (1450-1900)* <https://copyrighthistory.org/cam/tools/request/showRecord.php?id=commentary_d_1876#_ed_nref11> accessed 8 September 2025.

¹⁵ Farley (n6).

¹⁶ See *supra* n11.

¹⁷ See *supra* n13-14. See also Kawohl (n14).

¹⁸ Hughes (n7).

¹⁹ See *supra* n12. See also Rideau (n11).

²⁰ Hughes (n7).

²¹ McKenna Hadley-Burke, 'Mapping the camera's influence from the first permanent photograph to today' (*CBC Radio*, 26 May 2023), available at <https://www.cbc.ca/radio/spark/mapping-the->

digital photography further expanded accessibility and creativity, making photography integral to storytelling, journalism, and cultural and historic documentation. With the rise of smartphone technology, high-quality cameras became ubiquitous, allowing nearly everyone to self-express.²² As photography grew increasingly more common, autonomous, affordable and user friendly, its artistic value also became a topic for debate.²³ Scholars remain divided on the matter, with some arguing that straightforward, point-and-shoot photographs lack originality,²⁴ while others contend that they do possess artistic merit, particularly due to the photographer's choices regarding timing and spatial composition.²⁵ Even burst-mode photography has sparked discussions, with some asserting that it qualifies for copyright protection, as the photographer exercises creative judgment in curating or selecting the best image from a sequence of shots taken in rapid succession.²⁶ Consequently, the protection of simple photographs, including point-and-shoot, bursting images or snapshots, is currently not regulated at either the European or international level.²⁷ Certain jurisdictions afford special protections for this type of photographs such as

[camera-s-influence-from-the-first-permanent-photograph-to-today-1.6833996](#) (accessed 8 September 2025).

²² Ibid.

²³ Terry S. Kogan, 'The Enigma of Photography, Depiction, and Copyright Originality' (2015) 25(4) *Fordham Intellectual Property, Media and Entertainment Law Journal* 869, 882-883.

²⁴ Hughes (n7) 378.

²⁵ Geoff Dyer (ed.), John Berger, *Understanding A Photograph* (Penguin Books 2013), 18-20.

²⁶ Jani McCutcheon, 'Point and Shoot: Originality, Authorship, and the Identification of the Copyright Work in Modern Photography' (2020) 43(2) *University of Western Australia Law School* 163, 177.

²⁷ Mireille van Eechoud, 'Object, Subject, and Duration of Protection' in Mireille van Eechoud et al. (eds.) *Harmonizing European Copyright Law: The Challenges of Better Lawmaking* (Wolters Kluwer 2009), 35.

neighbouring rights and shorter protection term,²⁸ as seen in Italy, Germany and Norway.²⁹

The evolution in photography and its treatment in copyright law was gradually mirrored in international agreements. The Berne Convention of 1886 provided that countries which treated photographs as artistic works would admit them to the benefits of the Convention,³⁰ subject to their national legislation.³¹ However, photographs were included in the list of literary and artistic works under Article 2 of the Berne Convention only with the Brussels Revision of 1948.³² It was not until the 1996 WIPO Copyright Treaty³³ that the term of protection for photographic works was standardised to author's life and fifty years after his death, protection which was extended in the EU to life plus seventy years under the Copyright Term Directive.³⁴ Under the same Directive, photographs are protected (for seventy years post-mortem) if they are original, in the sense that they are the author's own intellectual creation reflecting his personality, no other criteria such as merit or purpose being taken into account. The protection of other photographs which do not meet this criterion is left to the

²⁸ Daniele Fabris, 'Copyright Protection of Photographs: a Comparative Analysis Between France, Germany and Italy' (*Kluwer Copyright Blog*, 21 December 2022) <<https://copyrightblog.kluweriplaw.com/2022/12/21/copyright-protection-of-photographs-a-comparative-analysis-between-france-germany-and-italy/>> accessed 8 September 2025.

²⁹ Hughes (n7) 385.

³⁰ Berne Convention 1886, Closing Protocol, available at <<https://www.wipo.int/wipolex/en/text/278701>> accessed 8 September 2025.

³¹ The Paris Additional Act of 1896, available at <<https://www.wipo.int/wipolex/en/text/278700>> accessed 8 September 2025.

³² Brussels Act 1948, available at <<https://www.wipo.int/wipolex/en/text/278722>> accessed 8 September 2025.

³³ World Intellectual Property Organization Copyright Treaty of 1996, available at <<https://www.wipo.int/wipolex/en/treaties/textdetails/12740>> accessed 8 September 2025.

³⁴ Directive 2006/116/EC of the European Parliament and of the Council of 12 December 2006 on the term of protection of copyright and certain related rights (codified version) [2006] OJ L 372/12 ('Copyright Terms Directive').

national law.³⁵ This criterion has become the standard test for assessing originality of artistic works in EU copyright law.

3 The concept of originality in EU copyright law

In the EU, copyright protection and related rights are governed by the domestic law of the Member States which have been harmonized to a great extent by the EU copyright and related rights directives (altogether 'EU copyright directives').³⁶ Several of these EU copyright directives refer to the concept of originality as the author's own intellectual creation,³⁷ although it is important to note that the definition does not apply to all subject matters, but only to specific ones such as databases, computer programs, photographs or works of visual arts in the public domain.

The prevailing definition of originality found in EU copyright directives³⁸ has been repeatedly confirmed by the CJEU in a series of decisions starting with the *Infopaq* judgment according to which, for a work to be original in the sense of

³⁵ Article 6 and recital 16 Copyright Terms Directive.

³⁶ These include: the Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society [2001] OJ L 167/10 ('InfoSoc' Directive); the Directive 2009/24/EC of the European Parliament and of the Council of 23 April 2009 on the legal protection of computer programs (Codified version) [2009] OJ L 111/16 ('Computer Programs Directive'); Copyright Terms Directive, as amended by Directive 2011/77/EU of the European Parliament and of the Council of 27 September 2011 amending Directive 2006/116/EC on the term of protection of copyright and certain related rights [2011] OJ L 265/1; Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases [1996] OJ L 77/20 ('Database Directive'); Directive 2006/115/EC of the European Parliament and of the Council of 12 December 2006 on rental right and lending right and on certain rights related to copyright in the field of intellectual property (codified version) [2006] OJ L 376/28; and Directive (EU) 2019/790 of the European Parliament and of the Council of 17 April 2019 on copyright and related rights in the Digital Single Market and amending Directives 96/9/EC and 2001/29/EC [2019] OJ L 130/92 ('Digital Single Market Directive').

³⁷ Article 1 Computer Programs Directive; Article 3 Database Directive; Article 6 Copyright Terms Directive; Article 14 Digital Single Market Directive.

³⁸ *Ibid.*

Article 2(a) of the InfoSoc Directive,³⁹ it must be the author's own intellectual creation.⁴⁰ The concept of originality was further developed by the CJEU in the *Painer*⁴¹ judgment, a case relating to the copyright protection of photographic portraits. There, the CJEU held that the standard of the author's own intellectual creation requires that the author made free and creative choices in several ways and at various points in its production,⁴² so that the work carries the author's personal touch.⁴³ Those choices were identified in the preparation phase (choosing 'the background, the subject's pose and the lighting'), when taking the photograph (choosing 'the framing, the angle of view and the atmosphere created'), and when selecting the snapshot (choosing 'from a variety of developing techniques ... or use computer software').⁴⁴ It further held that considering the various choices exercised by an author,⁴⁵ the freedom available to the author to exercise his creative abilities 'will not necessarily be minor or even non-existent'.⁴⁶ Thus, a portrait photograph can be protected by copyright, without that protection being inferior to that enjoyed by other works, including other photographic works.⁴⁷ These free and creative choices must be able to convey the originality of a work, the originality of which, according to the CJEU in *Funke Medien* and *Infopaq*, for literary works 'arises from the choice, sequence and combination of the words'.⁴⁸

³⁹ See *supra* n36.

⁴⁰ Case C-5/08 *Infopaq International A/S v Danske Dagblades Forening* [2009] ECR I-6569 ('*Infopaq*'), [37].

⁴¹ Case C-145/10 *Eva-Maria Painer v Standard VerlagsGmbH and Others* [2011] ECR I-12533 ('*Painer*').

⁴² *Ibid* [85]-[90].

⁴³ *Ibid* [92].

⁴⁴ *Ibid* [90]-[92].

⁴⁵ *Ibid* [91]-[92].

⁴⁶ *Ibid* [93].

⁴⁷ *Ibid* [94] and [98].

⁴⁸ Case C-469/17 *Funke Medien NRW GmbH v Bundesrepublik Deutschland* [2019] ECLI:EU:C:2019:623 ('*Funke Medien*'), [23] and the case law cited therein.

The CJEU has also analysed the situation when the author's free and creative choices are restricted to meet the originality criterion. In *BSA*,⁴⁹ a case concerning the graphic user interface of a computer program, the Court held that the criterion for originality is not met where the expression of the components of a graphic user interface is dictated by their technical function.⁵⁰ This is because the author cannot 'express creativity in an original manner and achieve a result which is an intellectual creation of that author'.⁵¹ Works dictated only by the technical considerations that leave no room for creative freedom are ineligible for protection, as are works devoid of any creativity.⁵²

At the national level, courts have also assessed originality by looking at the choices manifested by the author in the creative process. For instance, in a case concerning photographs of furniture that were featured in an online auction house, the Paris Court of Appeal held that:

the positioning of the objects was the subject of particular aesthetic choices; ... the framing and camera angle of objects is also the subject of arbitrary aesthetic choices; ... the photographs...are also the subject of particular research in the play of shadows and light; ... the objects are photographed on a neutral background but subject to particular gradations also intended to distinguish and highlight the photographed object.⁵³

⁴⁹ Case C-393/09 *Bezpečnostní softwarová asociace – Svaz softwarové ochrany v Ministerstvo kultury* [2010] ECR I-13971 ('*BSA*').

⁵⁰ *Ibid*, [49].

⁵¹ *Ibid* [50].

⁵² Case C-833/18 *SI and Brompton Bicycle Ltd v Chedech/Get2Get* [2020] ECLI:EU:C:2020:461 ('*Brompton*'), [24] and [26] and the case law cited therein. See also Case C-683/17 *Cofemel Sociedade de Vestuário SA v G-Star Raw CV* [2019] ECLI:EU:C:2019:721 ('*Cofemel*'), Opinion of AG Szpunar, [57].

⁵³ Arrêt du 26 Juin 2013, Cour D'Appel de Paris - RG n°10/24329 [unofficial translation from French], available at <<https://juriscom.net/wp-content/uploads/2013/07/caparis20130626.pdf>> accessed 8 September 2025.

The Paris Court finally noted that the originality of certain photographs is inferred from the post-production work carried out by the photographer ('tending to digitally rework the photographs using specialized software..., cleaning the background...by erasing superfluous or parasitic elements').⁵⁴ The notion of free and creative choices has thus become a cornerstone in defining originality within EU jurisprudence, mirroring the definition of originality in EU directives as the author's own intellectual creation, with the 'author's own' denoting the author's independent (free) choices, while 'intellectual creation' denoting the author's creative choices.⁵⁵

Following the harmonisation of the concept of originality,⁵⁶ the standard entails both an objective perspective ('own intellectual creation') and a subjective one (the author's personality expressed through free and creative choices).⁵⁷ The CJEU response to detecting the author's personality in the *Painer* judgment was to 'didactically enunciate the author's technical choices'⁵⁸ in the creative process, aiming to keep the judicial process clear of subjective analysis. Later, in the *Cofemel* judgment, the CJEU held that an intellectual creation is an author's own if it reflects the author's personality, 'as an expression of his free and creative

⁵⁴ *Ibid.*

⁵⁵ See by analogy with US copyright law, Annemarie Bridy (n5) ('For the sake of clarity, we shall use "originality" to mean independent authorship and 'creativity' to denote intellectual labor').

⁵⁶ Eleonora Rosati, 'Copyright at the CJEU: Back to the start (of copyright protection)' in Hayleigh Bosher and Eleonora Rosati (eds), *Developments and Directions in Intellectual Property Law. 20 Years of The IPKat* (OUP 2023).

⁵⁷ Stef van Gompel, 'Creativity, autonomy and personal touch: A critical appraisal of the CJEU's originality test for copyright' in Mireille van Eechoud (ed.), *The Work of Authorship* (Amsterdam University Press 2014) ('As long as authors have made free and subjective choices within the creative space that is available to them, their works should benefit from the protection afforded by copyright law').

⁵⁸ Louis Lefebvre, 'Photographie et Droit d'Auteur, d'Oscar Wilde au Cas Jimi Hendrix' (*Village de la Justice*, 3 September 2015), [unofficial translation from French] <<https://www.village-justice.com/articles/Photographie-droit-auteur-Oscar,20343.html>> accessed 8 September 2025.

choices'.⁵⁹ Simply put, for a work to be considered original, it is not necessary for the author's personality to be intentionally embedded or readily intelligible.⁶⁰ More often than not, personality manifests involuntarily and remains unintelligible, yet this does not imply the absence of the author's free and creative choices.⁶¹ Rather, personal touch means that personality is detectable through the choices made.⁶² Consequently, a work can still be deemed original even if the author's personality is not readily apparent, provided the author exercised creative freedom in the production process.

4 Originality of AI-supported output

In 2020, a study commissioned by the European Commission ('EC study'),⁶³ assessed whether EU copyright law is sufficiently flexible and adequate to assess originality for AI⁶⁴ assisted outputs (i.e. creations or applications generated by or with the aid of AI systems, tools, or techniques).⁶⁵ The study based its analysis on the *Painer* judgment and inferred from the said judgment that 'creativity in machine-aided production may occur at three distinct phases of the creative

⁵⁹ *Cofemel* (n52) [30].

⁶⁰ van Gompel (n57) ('the notions of 'personal touch' and 'personal stamp' cannot mean to signify an easily detectable 'signature' or personal 'style' of a creator').

⁶¹ See for instance *SHL Imaging, Inc. v. Artisan House, Inc.*, 117 F. Supp. 2d 301 (S.D.N.Y. 2000) ('no photograph, however simple, can be unaffected by the personal influence of the author.')

⁶² See also Mahy Kerzen, 'La protection juridique des photographies' (DPhil thesis, Université de Toulouse 2016).

⁶³ European Commission, 'Trends and Developments in Artificial Intelligence, Challenges to the Intellectual Property Rights Framework' (2020) ('EC study') <<https://op.europa.eu/en/publication-detail/-/publication/394345a1-2ecf-11eb-b27b-01aa75ed71a1/language-en>> accessed 8 September 2025.

⁶⁴ According to article 3(1) of the EU AI Act, an 'AI system' means a 'machine-based system that is designed to operate with varying levels of autonomy and that may exhibit adaptiveness after deployment, and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments'.

⁶⁵ The assessment was focused on both general and three priority domains: science (in particular meteorology), media (journalism), and pharmaceutical research.

process: (i) 'conception' (design and specification), (ii) 'execution' (producing draft versions), and (iii) 'redaction' (editing, refinement, finalisation).⁶⁶ The study concludes that AI assisted output can meet the originality criteria, with sufficient creative choices notably being manifested in the conception and redaction stages. However, in the execution stage, the AI predominantly controls the process. The study argues that for transformer models, such as GPT-2 and GPT-3, it is difficult to identify the users' creative choices in the conception, execution and the redaction stages based on the *Painer* judgment,⁶⁷ apart from the user-generated prompt (i.e., writing an initial sentence).⁶⁸ Examples of such tools are Deep AI's Text Generation API and StoryAI. Consequently, AI assisted output generated by such tools would not qualify as work.⁶⁹

The study explains that the 'black-box' nature of AI,⁷⁰ characterized by unexplained and seemingly random processes, (i) increases the distance between the user (input) and the machine (output) during the execution phase,⁷¹ leading users to perceive transformer models like GPT-2 and GPT-3, as non-conventional creative tools over which they do not have full control,⁷² (ii) and *prima facie* hinders the expression of human creativity in the final output because the result may fall outside the scope of the general authorial intent.⁷³ The study concludes that the inability to explain or predict the outcome can nevertheless be mitigated by ensuring that the 'output stays within the ambit of the author's general authorial intent'⁷⁴ and by allowing the author to intervene during the redaction

⁶⁶ EC study (n63) 79-80.

⁶⁷ Ibid 85.

⁶⁸ Ibid 83 and 85.

⁶⁹ Ibid 84.

⁷⁰ Ibid 36.

⁷¹ Ibid 80.

⁷² Ibid.

⁷³ Ibid 82-83.

⁷⁴ Ibid.

phase, including for completely unpredictable, non-explainable, quasi-random AI assisted output.⁷⁵

In the first place, the next sub-section addresses the emerging standards of authorial intent and control through a more thorough analysis and determines whether the users' inability to predict the outcome and the presumed subsequent loss of control and diminished alignment with the author's intent hinders the originality of AI-supported output. In the second place, it examines the relevant stages in the creative process in the context of generative AI, the objective being to determine whether the users' creative freedom can be located beyond the initial prompting stage.

4.1 Intent and control

Authorial control refers to the author maintaining control and oversight over the execution of a work,⁷⁶ with control implying an active involvement from the author's part. Considering that originality under EU copyright law requires the author's intellectual creation manifested through free and creative choices,⁷⁷ it is reasonable to infer that a work embodying the author's free and creative choices implies that the author exercised some degree of control over the execution process.⁷⁸ Importantly, evaluating the author's control over the creative process

⁷⁵ Ibid 83.

⁷⁶ Eleonora Rosati, 'The *Monkey Selfie* case and the concept of authorship: an EU perspective' (2017) 12(12) JIPLP 973. See also Jane C. Ginsburg, 'The Concept of Authorship in Comparative Copyright Law' (2003) 52(4) DePaul Law Review 1063 ('An "author" conceives of the work and supervises or otherwise exercises control over its execution').

⁷⁷ See *supra* n42 and n59.

⁷⁸ Eleonora Rosati, 'From conceptual art to AI: On the Druet/Cattelan dispute and authorship of works made by someone other than the "author"' (*The IPKat*, 16 June 2024) <<https://ipkitten.blogspot.com/2024/06/from-conceptual-art-to-ai-on.html>> accessed 8 September 2025.

through free and creative choices provides an objective standard, which offers greater predictability and increases legal certainty.⁷⁹

Just like control, authorial intent is not an originality criterion under EU copyright law but has been debated in the context of copyright infringement as illustrated in the *Brompton* case. The case concerned a request for preliminary ruling, where the CJEU was asked to determine whether a functional shape is eligible for copyright protection and, if so, what criteria should be used in that assessment. Advocate General Campos argued that the relevant consideration for copyright protection is the designer's original intention to achieve that technical result, rather than that of the alleged infringer.⁸⁰ The former, interpreted as the designer's subjective intention⁸¹ to '*achieve his own intellectual creation*',⁸² suggests the need to examine the designer's mindset or motivation at the time of conception. However, the CJEU did not adopt this reasoning, as it conflicts with its earlier rulings in *Cofemel* and *Levola*.⁸³ In those cases, the CJEU held that the concept of a 'work' requires the subject matter to be identified with sufficient precision and objectivity, criteria that cannot be met if the identification relies on subjective elements.⁸⁴ In other words, what the author thought or wanted to achieve is not relevant.⁸⁵ To ensure legal certainty, subjective elements⁸⁶ such as

⁷⁹ C-395/16 *DOCERAM GmbH v CeramTec GmbH* [2018] ECLI:EU:C:2018:172, Opinion of AG Saugmandsgaard Øe ('*DOCERAM*, AG Opinion'), [53].

⁸⁰ *Brompton* (n52) Opinion of AG Campos Sanchez-Bordona ('*Brompton*, AG Opinion'), [92].

⁸¹ Eleonora Rosati, 'AG Campos in Brompton Bicycle advises CJEU to rule that "exclusively" functional shapes do not deserve copyright protection' (*The IPKat*, 6 February 2020) <<https://ipkitten.blogspot.com/2020/02/ag-campos-in-brompton-bicycle-advises.html>> accessed 8 September 2025

⁸² *Brompton*, AG Opinion (n80) [93].

⁸³ Case C-310/17 *Levola Hengelo BV v Smilde Foods BV* [2018] ECLI:EU:C:2018:899, [40].

⁸⁴ *Cofemel* (n52) [32]-[34].

⁸⁵ Rosati (n81).

⁸⁶ *Cofemel* (n52) [32].

the author's motivations or intentions cannot be taken into account when determining whether a subject matter is eligible for copyright protection.⁸⁷

While originality of a work is determined through an objective test that implicitly excludes any assessment of the author's subjective intent, the emergence of more complex and prevalent transformer models of AI has brought renewed attention to the concepts of authorial intent and control. Transformer models, such as GPT-2 and GPT-3 have continued to evolve since the EC's study. The upgraded models, such as ChatGPT-3.5 and 4, are more complex and capable of responding not only to text but also to sound and music inputs and are trained on much larger datasets compared to their predecessors, particularly compared to GPT-2.⁸⁸ As these models have become more advanced, they have also become increasingly complex, making them less 'explainable' than earlier versions. Compared to traditional assisting tools for creation such as a camera, humans have less control and understanding of the creative process in the context of generative AI.⁸⁹ Due to the presence of a quasi-autonomous, non-living intermediary between the human and the output,⁹⁰ which can cause unpredictable and unexplainable outcomes,⁹¹ scholars have debated the need to determine the quantum of human control in this process and whether the output reflects the author's intent.⁹²

⁸⁷ Laureen Schuldt, 'EU Copyright and Trademark Law: a unifying lens for the protection of Fashion Designs?' (Master Thesis, Stockholm University 2023).

⁸⁸ Adam Zewe, 'Explained: Generative AI. How do powerful generative AI systems like ChatGPT work, and what makes them different from other types of artificial intelligence?' (*MIT News*, 9 November 2023) <<https://news.mit.edu/2023/explained-generative-ai-1109>> accessed 8 September 2025.

⁸⁹ Christopher T. Zirpoli, 'Generative Artificial Intelligence and Copyright Law' (*CRS Legal Sidebar*, 29 September 2023) <<https://crsreports.congress.gov/product/pdf/LSB/LSB10922>> accessed 8 September 2024.

⁹⁰ Samantha Fink Hedrick, 'I "Think," Therefore I Create: Claiming Copyright in the Outputs of Algorithms' (2019) 8(2) *JIPeL* 324, 345. See also *supra* n71.

⁹¹ *Ibid* See also *supra* n72.

⁹² *Ibid*. See also *supra* n72 and n73.

According to the EC study, general authorial intent implies that the author has a general conception of the work before expressing it, while allowing for unintended expressive features.⁹³ This general conception of the work or intent can be understood as a *categorical intention*, which, according to philosopher Jarrod Levinson, concerns what the author has created and the basic purpose of the work.⁹⁴ Categorical intentions are concerned with how the author ‘*fundamentally conceived or approached*’ the work⁹⁵ or the artistic category the work belongs to,⁹⁶ and are considered infallible.⁹⁷ In contrast, *semantic intentions*, relate to the work’s meaning and (the audience) interpretation,⁹⁸ and are seen as fallible.⁹⁹ It can thus be generally assumed that in traditional works of art, since categorical intentions rarely fail,¹⁰⁰ the authors will successfully produce the category of art they intended to create, resulting in an outcome that aligns with the author’s general intent. In the context of opaque AI, the user is not able to explain or predict the outcome, leading to the output possibly falling outside the author’s intent.¹⁰¹ However, this intent cannot refer to categorical intention, as such intentions never fail. In essence, the concern about misalignment between the outcome and the author’s intent, suggests that intention should lead to predictable outcomes,¹⁰² yet intentions do not always lead to results one anticipates or expects.

⁹³ EC study (n63).

⁹⁴ Jerrold Levinson, ‘Intention and Interpretation: A Last Look’ in Gary Iseminger (ed.), *Intention and interpretation* (Temple University Press 1992), 221 et seq.

⁹⁵ Ben Picozzi, quoting Levinson in ‘What’s Wrong with Intentionalism? Transformative Use, Copyright Law, and Authorship’ (2017) 126(5) *The Yale Law Journal* 1408.

⁹⁶ Hans R.V. Maes, ‘Intention, Interpretation, and Contemporary Visual Art’ (2010) 50(2) *The British Journal of Aesthetics* 121.

⁹⁷ Picozzi (n95).

⁹⁸ *Ibid.*

⁹⁹ *Ibid.*

¹⁰⁰ *Ibid.*

¹⁰¹ See *supra* n72.

¹⁰² Costello and Iversen (n8).

Scholars that have researched authorial intent in the context of the famous Jackson Pollock's paintings, suggest that the final work can still be consistent with the author's general intent even when unintended expressions or random elements arise during the creative process.¹⁰³ For example, when Pollock applies paint on the canvas, his primary goal is to create an image, even though he does not control or intend every specific shape and pattern that the paint forms.¹⁰⁴ Pollock may not be able to predict how exactly that painting will look like, due to unintended and random elements that might occur in the creation process. Nevertheless, he will most likely succeed in creating a painting, thereby fulfilling his categorial intention. A similar principle applies to street photography. Its dynamic nature introduces elements of randomness, such as a passing stranger unexpectedly entering the frame. Although the final image captured by the camera contains unpredicted elements, the photographer's general authorial intent to capture street life is still met. The content of the photograph caused by unexpected elements is not generated by the photographer's categorial or semantic intention, since the photographer 'does not specifically intend' all the elements in the photograph.¹⁰⁵ In any event, despite the unexpected elements in the outcome, the resulting photograph would meet the originality criteria under EU copyright law. Similarly, when a user inputs a description into a generative AI with the intent of generating a digital painting (categorial intention) that conveys immediate feelings of joy (semantic intention), the AI processes the input and generates a digital image that may include unexpected elements, such as dark colours and edged shapes, which the user did not anticipate.¹⁰⁶ The user is

¹⁰³ Dan L. Burk, 'Thirty-Six Views of Copyright Authorship, by Jackson Pollock' (2020) 58(2) *Houston Law Review* 263.

¹⁰⁴ *Ibid.*

¹⁰⁵ *Ibid.*

¹⁰⁶ Picozzi (n95).

however free to provide the AI with more details, such as specific colour or shapes to be included in the final outcome. This can increase, to some extent, the predictability of the content of the image and support a closer alignment with the specific outcomes the user intended to achieve. However, this does not guarantee that the semantic intention will necessarily be realised, as the audience may interpret the image differently. In contrast, the user's general categorial intention to create a digital painting would have been fulfilled, despite the AI's failure to associate joy with light colours. Determining the originality of the work based on the author's intent 'about specific effects they intended to achieve',¹⁰⁷ would represent a narrow interpretation of the author's own intellectual creation. This perspective overlooks the possibility that an author may exercise free and creative choices during the production process, even if the intended specific content or effects are not fully realized. Such works may still meet the criteria for originality.

As for semantic intentions, which refer to the message the author tries to convey through the work (e.g. feelings of joy), they are irrelevant for the assessment of originality for several reasons. First, such intentions neither determine whether an individual qualifies as an author nor whether a work is original.¹⁰⁸ Instead, they are largely shaped by the audience's interpretation of the work which might not always align with the message the author intended to convey, placing them beyond the direct control of the user or the AI. Second, not all works are intended to have a semantic meaning or to convey a special message to the audience.¹⁰⁹ Third, determining the author's semantic intention, understood as what the author intended to express or what the works

¹⁰⁷ Christopher Buccafusco, 'A Theory of Copyright Authorship' (2016) 102 (5) *Virginia Law Review* 1229, 1263.

¹⁰⁸ *Ibid* 1261.

¹⁰⁹ *Ibid* 1270.

represents¹¹⁰ is a challenging inquiry. This is primarily because it must be conducted retrospectively,¹¹¹ and because it lacks the certainty and objectivity necessary to establish the existence of a work.¹¹² Relying on subjective intention as a criterion for establishing originality would risk excluding works created unintentionally or by individuals in altered states of consciousness (e.g., under the influence of substances or experiencing mental illness).¹¹³ In contrast, evaluating the creative process through free and creative choices provides an objective standard, enhancing predictability and ensuring legal certainty.¹¹⁴ The extent of the author's control over the creative process is one such objective standard. Nonetheless, considering that control is assessed based on free and creative choices, the evaluation of originality through the lens of the author's control in the creative process becomes somewhat circular. The EU case law holds that originality is demonstrated through free and creative choices, implying the author's active involvement and thus a level of control over the creative process, without the control necessary to be present at each stage of the said process (i.e. full control not required).¹¹⁵ If free and creative choices are used as a proxy for control and intent, it may be inferred that the author exercises some degree of control over the creative process and that the work thus meets the originality criteria.

While authorial intent and control should not be entirely dismissed, these elements alone cannot establish originality. When authorial intent can be easily

¹¹⁰ Ibid 1287.

¹¹¹ European Copyright Society, 'Opinion of the European Copyright Society in relation to the pending reference before the CJEU in *Brompton Bicycle v Chedech / Get2Get*, C-833/18' (12 December 2019) <<https://europeancopyrightsociety.org/wp-content/uploads/2019/12/ecs-opinion-brompton-final-12-12-2019-final-3.pdf>> accessed 8 September 2025.

¹¹² Ibid.

¹¹³ Rosati (n81). See also Burk (n103).

¹¹⁴ *DOCERAM*, AG Opinion (n79) [53].

¹¹⁵ Rosati (n78).

discernible in a work (either inferred from recurring themes or techniques, specific symbols, language or design choices, or stated in the author's testimony, statements, prefaces or notes provided alongside the work), it can help in evaluating its originality, without being determinative of originality.¹¹⁶ When intent is not readily apparent, the primary criterion to assess originality is whether the subject matter is an 'objectively identifiable bounded expressive object (a work) that can be said to have resulted from an author's free and creative choices and bear[s] her personal mark'.¹¹⁷ Similar to a personal stamp, where a lack of legibility does not hinder the originality of the work, but rather means that personality is ingrained in the final creations if sufficient choices were made,¹¹⁸ the same principle should apply to authorial intent. Identifying authorial intent involves assessing a subjective element, much like evaluating an author's personality. The CJEU has established that to objectively determine whether a work reflects the author's personality, one must identify the author's free and creative choices during the production process.¹¹⁹ Just as an author's personality is expressed through their free and creative choices, so too can authorial intent and control be understood as an expression of those choices. This approach aligns with the standard practice under EU copyright law, which determines originality based on the author's free and creative choices. The following subsection explores how these choices manifest in the context of an outcome produced by users with the assistance of generative AI.

¹¹⁶ Burk (n103). See also Rus VerSteeg, 'Intent, Originality, Creativity and Joint Authorship' (2002) 68(1) *Brooklyn Law Review* 123, 131.

¹¹⁷ Justine Pila and Paul Torremans, *European Intellectual Property Law* (2nd edn, OUP 2019), 11.3.2.

¹¹⁸ See *supra* n59 and n60.

¹¹⁹ See *supra* n42, n43 and n59.

4.2 Creative freedom

Drawing on the *Painer* judgment, outputs created with the support of generative AI can meet the originality criteria if users can manifest their creative freedom at different stages of the creative process, such as preparation, execution and post-production.

4.2.1 Preparation stage

The starting point by which the generative AI will deliver a (draft) output is the preparation stage where users provide inputs or prompts.¹²⁰ The prompts are either text-to-image/video/sound or image-to-image, sound-to-sound, or cross-modal (e.g., sound-to-image, image-to-sound). In natural language processing, a transformer processes each word provided as a prompt in a corpus of text by encoding it as a token.¹²¹ It then creates an ‘attention map’¹²² that captures the relationships between all tokens and which ‘helps the transformer understand context when it generates new text’.¹²³ Essentially, it converts inputs into tokens that are represented as numerical vectors.¹²⁴ These vectors allow the AI to understand text in a way that reflects the meanings and relationships between words, rather than just treating them as isolated symbols.¹²⁵

¹²⁰ See OpenAI, ‘Managing Tokens’ <<https://platform.openai.com/docs/advanced-usage/managing-tokens>> accessed 8 September 2025.

¹²¹ Zewe (n88).

¹²² Ibid.

¹²³ Ibid.

¹²⁴ AI models, such as those used in natural language processing, operate on numbers rather than text.

¹²⁵ Microsoft Corporation, ‘Re: Notice of Inquiry and Request for Comment re Artificial Intelligence and Copyright’ (U.S. Copyright Office, Received on 30 October 2023, Posted on 1 November 2023) <<https://www.regulations.gov/comment/COLC-2023-0006-8750>> accessed 8 September 2025.

The preparation stage was defined in *Painer* as choices that include selecting the background, the subject's pose, and lighting, all pertaining to decisions related to setting up the scene. It involves planning and making decisions about the elements that will be within the frame and how they are arranged before the actual photograph is taken. These decisions are somewhat distant from the moment of output delivery (i.e., the pressing of the shutter), as they occur early in the process and do not directly result in the image's capture. This approach seems to be common in photography, where the preparation stage includes pre-shutter actions or actions preceding the camera's actual capture and delivery of the image.¹²⁶

At the time of the EC study, generative AI was largely seen as a tool for automation, with limited scope for user interaction.¹²⁷ However, as generative AI has since evolved to include more interactive models that enable users to guide the AI towards a personalised outcome, this article asserts that users have the greatest opportunity to express their creative freedom during the 'prompting' stage, which is essentially the preparation stage. The detailed creative plan can be expressed by users through the prompts they craft. For instance, when using an image generator like Deep Dream, users can specify detailed instructions

¹²⁶ See Farley (n6) 427, discussing the Court's approach in *Burrow-Giles Lithographic Company v. Sarony* (n6) to assessing originality of photographs. See also Shyamkrishna Balganesh, 'Causing Copyright' (2017) 117(1) Columbia Law Review 1, 22.

¹²⁷ GPT-2, for instance, which the EC study (n63) gives as an example, was released in 2019, and although it was considered a significant advancement, it was primarily seen as a tool for tasks like text completion or summarization. The same holds true for Deep AI's Text Generation API and Story AI. While Talk to the Transformer (InferKit) allowed users to interact with GPT-2 by generating text based on user input, it was primarily about showing how GPT-2 could continue or complete text prompts. Source: OpenAI, 'Better language models and their implications' (14 February 2019) <<https://openai.com/index/better-language-models/>> accessed 8 September 2025. See also Liane Jones, 'DeepAI Review: What is it and How Can You Use it?' (*TopApps*, 5 July 2023) <<https://topapps.ai/blog/deepai-review/>> accessed 8 September 2025, and Terril Dicki, 'What is InferKit AI?' (*Blockchain News*, 29 July 2023) <<https://blockchain.news/wiki/what-is-inferkit-ai>> accessed 8 September 2025.

regarding the desired outcome, whether by providing a text or image prompt and select their preferred AI model, such as Realistic or Animatron style (i.e., animated, cartoon-like designs). They can provide comprehensive textual descriptions of the desired image and specify elements they want to exclude (negative prompt), choose through different modifiers, such as the style of an artist (e.g. Picasso), the quality (e.g., crisp, ultra-realistic) and photographic effects (e.g. dynamic lighting, matte background). When users make a variety of creative choices through detailed inputs to the AI,¹²⁸ including the subject matter (a poem, a novel, a plot), style, palette composition, the main characters in a plot and their personalities, the emotion evoked,¹²⁹ the setting or the narrative, the output can meet the originality criteria.¹³⁰ For users of generative AI, the preparation stage is essentially the ‘prompting’ stage, where they supply textual, image or sound inputs to the AI, in the same way a movie director is a ‘promptor of actors, actions, scenes, ideas’.¹³¹

Conversely, one or just very few interventions or prompts given to generative AI to create a complex story or image,¹³² is insufficient to demonstrate that users made creative choices at this initial stage.¹³³ The generative AI would

¹²⁸ Kevin Kelly, ‘Picture Limitless Creativity at Your Fingertips’ (*Wired Magazine*, 17 November 2022) <<https://www.wired.com/story/picture-limitless-creativity-ai-image-generators/>> accessed 8 September 2025.

¹²⁹ Ibid.

¹³⁰ Mackenzie Caldwell, ‘What Is an “Author”?-Copyright Authorship of AI Art Through a Philosophical Lens’ (2023) 61(2) *Houston Law Review* 411.

¹³¹ Kelly (n128).

¹³² Matthew Sag, ‘Testimony before the U.S. Senate Committee on the Judiciary Subcommittee on Intellectual Property: Hearing on “Artificial Intelligence and Intellectual Property – Part II: Copyright and Artificial Intelligence”’ (12 July 2023) <https://www.judiciary.senate.gov/imo/media/doc/2023-07-12_pm_-_testimony_-_sag.pdf> accessed 8 September 2025. See also U.S. Copyright Office, Library of Congress, ‘Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence’ (2023), 88(51) *Federal Register* 16190.

¹³³ Zirpoli (n89).

merely react to the users' input by 'regurgitating some statistical variation'¹³⁴ of the patterns it learned from existing works. The situation is similar to point-and-shoot photographs or snapshots where the user relies on the camera's automated settings with minimal creative input. This has resulted in varying approaches across jurisdictions, with some offering limited or no copyright protection for such photographs.¹³⁵ The limited human intervention at the preparation stage can however be counteracted if users intervene over the draft output,¹³⁶ by providing feedback to generative AI, suggesting content revisions, emphasizing specific points, and refining prompts.¹³⁷ It is in fact the depth and scope of user's interventions over the AI-supported output that determines the creative freedom and thus the originality of the final output. As it can be seen in the next analysis, the stages where users manifest their free and creative choices in the production process are interconnected and iterative.

4.2.2 Execution stage

As noted in the EC study, the execution stage involves, for example, the 'shooting of photographs and videos',¹³⁸ thus converting the plan into draft versions of the work. In other words, it refers to how the user's input in the preparation stage is converted into a draft outcome by the AI. The CJEU, in *Painer*, defined the stage of 'taking the photograph' as the process of selecting the framing, the angle and the atmosphere created (the latter can be understood as choosing the light and

¹³⁴ Will Knight, 'This AI-generated musak shows us the limit of artificial creativity' (MIT Technology Review, 26 April 2019), available at <https://www.technologyreview.com/2019/04/26/103116/this-ai-generated-musak-shows-us-the-limit-of-artificial-creativity/> (accessed 8 September 2025).

¹³⁵ See *supra* n27.

¹³⁶ Caldwell (n130).

¹³⁷ Sag (n132).

¹³⁸ EC study (n63) 80.

the background settings) when taking a photograph. These actions precede the act of pressing the shutter and ‘seem to be more important in establishing whether it [the photograph] is the author’s own intellectual creation’.¹³⁹ To borrow an expression from Farley, an US academic, in relation to an important US Court judgment¹⁴⁰ concerning a portrait photograph, the CJEU in *Painer* ‘strain[ed] to locate authorship away from the box’.¹⁴¹ When photographs became part of the subject matter of copyright law,¹⁴² the questions relating to originality and authorship fell to the Courts.¹⁴³ The Courts grappled with this issue by looking at the author’s contribution before the shutter was pressed.¹⁴⁴

Although encompassing pre-shutter actions, just like the preparation stage, the stage of taking a photograph focuses on specific technical choices¹⁴⁵ regarding the capture of the scene that was arranged during the preparation phase¹⁴⁶ and are directly linked to the immediate cause of the output.¹⁴⁷ While it is relatively straightforward to distinguish between pre-shutter decisions made in the preparation stage (e.g. background, pose) and those made at the stage of taking a photograph (e.g. angle, framing) when using a camera, the distinction is less clear when using generative AI. The execution stage (as the equivalent of ‘taking a photograph’) in the context of AI-supported output can be understood as the stage where human actions made prior to the machine’s intervention are

¹³⁹ Andres Guadamuz, ‘Can the monkey selfie case teach us anything about copyright law?’ (WIPO Magazine, 21 February 2018) <https://www.wipo.int/wipo_magazine/en/2018/01/article_0007.html> accessed 8 September 2025.

¹⁴⁰ *Burrow-Giles Lithographic Company v. Sarony* (n6).

¹⁴¹ Farley (n6).

¹⁴² See *supra* n30, n31 and n32.

¹⁴³ The Berne Convention does not explicitly specify that only original photographic works are eligible for protection, nor does it provide a definition of originality.

¹⁴⁴ Hughes (n7) fn. 151.

¹⁴⁵ See *supra* n58.

¹⁴⁶ See by analogy *infra* n144.

¹⁴⁷ Balganesch (n126), discussing copyright in a selfie-photo taken by a monkey.

converted into a draft outcome.¹⁴⁸ This approach was taken by the CJEU in *Painer*, who neither addressed the camera's role as a non-living agent in the execution process, nor considered the execution stage as an isolated act of pressing the shutter. Doing so would involve evaluating the extent of a machine's involvement in the creation of the outcome. The degree of a tool's influence on the execution of a work was brought before the Italian Supreme Court in *RAI v. Bianchieri*,¹⁴⁹ a case addressing the issue of copyright protection in an artwork (digital image) created using software. The Italian Supreme Court held that merely using software to create artwork does not automatically exclude the protection of the work under copyright law.¹⁵⁰ The original claim was brought by an architect against the Italian public broadcaster RAI, alleging copyright infringement. The Court of Genoa and subsequently the Court of Appeal confirmed the architect's authorship and upheld the copyright violation by RAI, recognizing the work's creative nature. However, RAI argued before the Italian Supreme Court that the image in question was primarily created by software algorithms with minimal creative input from the architect. In the case at hand, the architect used software to generate a digital 'fractal' image of a floral subject. This fractal image is defined by self-similarity, meaning its shape repeats at various scales. The software develops the shape, along with its colours and details, using mathematical algorithms.¹⁵¹ The Supreme Court did not assess these factual arguments as they were raised only during the appeal and were considered inadmissible. Nevertheless, the Supreme Court stressed the necessity

¹⁴⁸ See *infra* n171-172.

¹⁴⁹ *Rai Radiotelevisione Italiana S.P.A v Bianchieri Chiara* No. 1107/2023, available at <<https://www.italgiure.giustizia.it/xway/application/nif/clean/hc.dll?verbo=attach&db=snciv&iid=20230116/snciv@s10@a2023@n01107@tO.clean.pdf>> accessed 8 September 2025).

¹⁵⁰ *Ibid.*

¹⁵¹ *Ibid* [5.1].

for a factual analysis to determine the extent to which the tool absorbed the creativity of the artist who made use of the software.¹⁵² Although the Court of Appeal did not conduct a thorough examination of creative freedom, it still found that ‘the work is not a simple reproduction of a flower but a reworking of it’.¹⁵³ The Court of Cassation upheld this conclusion. The decision to grant copyright protection to a digital image created with the help of a software was based on the positive impact of the image on users, its notoriety, and its use by RAI as a symbol of the event.¹⁵⁴ These factors were sufficient to demonstrate that the digital image was creative enough to justify granting authorship to the architect.

The manner in which the Italian Supreme Court would have assessed the extent to which the tool incorporated the creativity of the artist remains unclear. However, if the Court had applied the standard of ‘free and creative choices’, its focus would likely have been on the quantum of choices made by the artist, rather than on the extent of the algorithm involved in the creative process. Had the Court examined the creative freedom, it could have concluded that the architect made sufficient choices in the production process. Based on an interview with the architect, the latter not only chose the subject matter—the flower—but also customised, enriched, and detailed the work in various ways by choosing the lighting effects, the composition and the palette,¹⁵⁵ all of which were actions closer to the moment of output delivery. Finding originality in the image based on these choices would align with the CJEU approach of locating the creative freedom in the execution stage in the actions prior to the moment of delivering the output

¹⁵² Ibid [5.3].

¹⁵³ Ibid [4.5].

¹⁵⁴ Ibid.

¹⁵⁵ Anna Maria Monteverdi, ‘Chiara Biancheri, “The Scent of The Night”. Riconosciuta la proprietà artistica’ (*Rumorescena*, 23 February 2023), [unofficial translation from Italian] <<https://www.rumorescena.com/23/02/2023/chiara-biancheri-the-scent-of-the-night-riconosciuta-la-proprieta-artistica>> accessed 8 September 2025.

(i.e. shooting the photograph).¹⁵⁶ As the EU case law demonstrated, 'taking a photograph' is a process involving a range of human choices, not an isolated act of pressing the shutter.¹⁵⁷ If the execution stage is viewed as converting the user choices into a draft output, similar to 'shooting a photograph,' then those choices can also serve as an additional factor in assessing originality of AI-supported output.

4.2.3 *Post-production stage*

Drawing a parallel with the post-production stage defined in *Painer*, where selecting a snapshot involved choosing from a variety of developing techniques, the post-production stage in the context of generative AI can similarly be defined as choosing an output from multiple generated options.¹⁵⁸ It may also include decisions such as modifying the output generated by the AI in the execution stage by altering words and text structure, cropping or framing, or adjusting the composition and colour palette in an image. For instance, Deep Dream allows users to modify the resulting image by drawing directly on it, enabling a form of inpainting.¹⁵⁹ If the Paris Court of Appeal recognized the originality of a work where the author made creative decisions during post-production, such as digitally adjusting colours and contrast, removing the background, and eliminating redundant elements,¹⁶⁰ then the editing choices made by users on a digital image created with the help of generative AI should similarly entitle those users to authorship of the resulting image.¹⁶¹

¹⁵⁶ See *supra* n139, n144 and n147.

¹⁵⁷ McCutcheon (n26).

¹⁵⁸ See EC study (n63) 81. See also Sag (n132) and Hedrick (n90).

¹⁵⁹ Jessica Rizzo, 'Who Will Own the Art of the Future?' (*Wired Magazine*, 27 July 2022) <<https://www.wired.com/story/openai-dalle-copyright-intellectual-property-art/>> accessed 8 September 2025.

¹⁶⁰ See *supra* n54.

¹⁶¹ See *supra* n44.

The more users engage with generative AI and intervene in the output by refining their prompts and through editing and revision, the higher the likelihood that the final output will reflect the author's personality.¹⁶² The creative process entails a wide spectrum of choices which are continuous and interconnected¹⁶³ such that the 'creative choices are not limited to a single moment but continue throughout the process'.¹⁶⁴ Every choice made by the user throughout the creative process, from the initial prompting to fine-tuning the output,¹⁶⁵ forms a continuous and interconnected chain of actions that constitute the author's creative freedom.¹⁶⁶ It is the dynamic interaction between the users and the AI across the iterative stages of creation that enables the expression of creative freedom, ultimately embedding the users' personality in the final AI output.¹⁶⁷ Moreover, even if the user's creative freedom is only minimally exercised during one or some stages in the creative process, this does not render those choices insignificant or absent. For instance, if the author has primarily exercised free and creative choices in the preparation stage prior to the AI converting those choices into an output, originality in the output can be established already at this point. Even if the post-production choices are minimal, they can reinforce the originality and further substantiate it. Given that the CJEU has determined that a portrait photograph can be protected by copyright, and that variations in creative freedom should not affect this protection,¹⁶⁸ AI-supported outputs can be treated similarly. While it may be contended that

¹⁶² Kenny Verbeek, 'Randomness as a Generative Principle in Art and Architecture' (Master Thesis, MIT 2006). See also Caldwell (n130).

¹⁶³ Carol Armstrong, 'Automatism and Agency Intertwined: A Spectrum of Photographic Intentionality' (2012) 38(4) *Critical Inquiry* 705.

¹⁶⁴ *Ibid.*

¹⁶⁵ Hedrick (n90).

¹⁶⁶ *Ibid.*

¹⁶⁷ Caldwell (n130).

¹⁶⁸ See *supra* n45.

human operators have historically maintained control over traditional tools like cameras,¹⁶⁹ as opposed to generative AI, and therefore that the creative decisions involved in photography differ from those in the context of generative AI, it remains possible for users to maintain control over some stages in the creative process as already discussed in this article.¹⁷⁰ Furthermore, although generative AI can respond to a wide range of user prompts and be perceived as acting autonomously in executing them, there are reasons to view generative AI as not so different from other tools employed by authors in the creative process. This is because the AI's output reflects significant prior human input, including the user's textual descriptions, image or sound prompts instructions, and modifiers (e.g., quality, effects).¹⁷¹ This mirrors early debates about photography, where the question was whether photographers manipulating their equipment were engaged in creative activity that constituted authorship.¹⁷² Over time, even operational choices with cameras have been recognized as a foundation for copyrightable originality.¹⁷³ Just as sophisticated cameras came to be viewed as tools supporting creative choices, such as shading, framing, and post-processing, AI can similarly be seen as extending user creativity in areas like style, composition and effects.

5 Conclusions

The scepticism surrounding the originality of outputs created with the support of generative AI is a natural reaction to any disruptive innovation that challenges existing frameworks. This scepticism, similar to that faced by early photography,

¹⁶⁹ EC study (n63).

¹⁷⁰ See *supra* sub-section 4.1 **Intent and control**.

¹⁷¹ See *supra* n128-130.

¹⁷² Burk (n103).

¹⁷³ *Ibid*.

is likely to be unfounded in the long run. The introduction of photography in the nineteenth century sparked a debate over whether photographs, initially seen as products of a mechanical process, could be considered original works. History has shown that perceptions change as society becomes more familiar with new technologies. The EU copyright law is sufficiently flexible to address whether works created with new technology such as generative AI can meet the originality criteria. The originality test under EU copyright law has been cemented in a case involving a portrait photography and has been defined as the exercise of free and creative choices at various stages of the creative process. This article has shown that if the execution stage is seen as a process involving a series of choices where the AI converts those choices into a draft outcome, then the execution stage does not need to be isolated nor seen as merely a step of pressing the shutter. Applying this perspective, even in cases of opaque generative AI, where the execution stage may not be fully understood by the user, originality can still be attributed. The debate surrounding the predictability of the outcome attempts to define the execution stage by examining the extent to which the machine dominates the creative process through the lenses of predictability, control, and intent. The concept of an author's intent has not been thoroughly analysed in EU copyright law, partly because it represents a subjective criterion that is not deemed relevant to assessing originality, and partly because the notion of an author's intent may carry different meanings, as reflected in the various types and definitions of intent. If the standard for an author's intent is based on categorial intention, it can reasonably be assumed that the outcome will reflect this intent, at least in terms of how the author fundamentally conceived the work. In contrast, semantic intentions are concerned with the meaning of the work and depend on the audience interpretation, rendering them irrelevant for assessing originality. The predictability of a work's details has been muddled with the authorial intent, although categorial or semantic intentions do not influence the

exact details of the outcome. The predictability is more likely to be concerned about the degree of user control over the creative process. Nonetheless, if free and creative choices are used as a proxy for control, the assessment of originality through the lenses of author's control risks becoming circular, as control is determined by the extent of these creative choices. While the elements of control and intent can help in determining originality where they are evident in the creative process or its outcome, they are not dispositive of originality.¹⁷⁴ The standard of originality in photography, where a non-living agent stands between the human and the outcome, has consistently been based on free and creative choices. This same standard should apply to AI-supported output.¹⁷⁵ The free and creative choices are channelled through the AI tool, just as photography has been channelled through cameras, images through Adobe Photoshop, or music through sound guitar pedals.¹⁷⁶ As explained by Advocate General in *InfoPaq*, copyright protection should not impede the development of new technologies and should remain flexible to accommodate technological advancements.¹⁷⁷

¹⁷⁴ See *supra* n116.

¹⁷⁵ Van Lindberg, 'Recognizing AI-Assisted Art: The Copyright Office is Using the Wrong Legal Standard' (*IP WatchDog*, 25 February 2023) <<https://ipwatchdog.com/2023/02/25/recognizing-ai-assisted-art-copyright-office-using-wrong-legal-standard/id=157072/>> accessed 8 September 2025.

¹⁷⁶ The Motion Picture Association, Inc., 'Notice of Inquiry and Request for Comments re Artificial Intelligence and Copyright: Comments of the Motion Picture Association, Inc.' (30 October 2023), 45 <<https://www.motionpictures.org/wp-content/uploads/2023/10/2023.10.30-MPA-Responses-to-CO-NOI.pdf>> accessed 8 September 2025, thereby quoting *Thaler v Perlmutter*, No. 22-1564 WL 5333236 (F.Supp.3d Aug. 18, 2023).

¹⁷⁷ *Infopaq* (n40), Opinion of AG Trstenjak, [1] and [42].