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COPYRIGHT AND THE EXPRESSION ENGINE: IDEA AND EXPRESSION IN AI-ASSISTED CREATIONS

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INTRODUCTION

In early 2019, the University of Amsterdam's Institute for Information Law (IViR) was tasked by the European Commission to examine potential problems in copyright and patent law concerning AI-assisted productions. These were the good old days when "The Next Rembrandt"[1] was the talk of the town among copyright scholars, and generative AI was largely science fiction. In November 2020—in the midst of the COVID pandemic—our study was published to little fanfare.[2]

Upon the European Commission's instructions, our study was mainly doctrinal and descriptive. We were tasked with examining how existing European IP laws dealt with AI-assisted productions, and if there was an immediate need for legislative intervention at the EU level. Regarding copyright law, our answer was a resounding no.

Based on an analysis of the law of copyright in the EU and the case law of the EU's Court of Justice ("CJEU"), we developed an analytical framework for assessing whether an AI-assisted production qualifies for protection and who might qualify as an author.[3] Assuming—as we did—that fully autonomous "creating" AI systems would not exist within the foreseeable future, we concluded that the existing EU framework of copyright and neighboring rights could adequately address the main problems raised by AI-

* Professor Emeritus, University of Amsterdam, Institute for Information Law. The author is grateful for comments received during and after the AI Disrupting Law Online Symposium that was organized by the Chicago-Kent Law Review on March 8th and April 26th, 2024, particularly from Professors Edward Lee and Mark Lemley.

1. *See e.g.*, Andres Guadamuz, *Artificial Intelligence and Copyright*, WIPO MAG. (Oct. 1 2017) https://www.wipo.int/en/web/wipo-magazine/articles/artificial-intelligence-and-copyright-40141 [https://perma.cc/RQ5Z-BG6W].

2. P. Bernt Hugenholtz et al., Directorate-General for Comm. Networks, Content & Technology, *Trends and Developments in Artificial Intelligence: Challenges to the Intellectual Property Rights Framework* (Sept. 2020).

3. A brief summary of our study is presented in Section 2 of this essay.

assisted production.[4] The European Commission adopted our conclusions in its 2020 *IP Action Plan*.[5]

Then, in the Fall of 2022, everything changed. Generative AI—barely a few footnotes in our study—took the world by storm and caused an earthquake in the creative sectors and in the field of copyright of a magnitude not experienced since the emergence of the Internet.[6]

While the recent tsunami of literature on AI and copyright mostly concerns input-related issues (is training generative AI systems on copyright-protected content permitted, or should it be?), the output-related questions addressed in our study have also become moot, particularly in the United States, where the Copyright Office has issued guidelines that severely restrict registering AI-assisted productions as copyright-protected works. Whereas the USCO guidelines align with doctrinal reservations raised in scholarly literature,[7] they have also been criticized as overly restrictive or even unconstitutional.[8]

This essay revisits the findings of our 2020 report in light of recent developments in generative AI and addresses some of the objections raised in literature and practice. Like the study on which this essay is based, our focus remains on doctrinal issues. We will avoid addressing the much larger question: what role remains for copyright as an "engine of expression" when artificial expression engines can generate useful substitutes for nearly every category of creative works?[9]

I. MAIN FINDINGS OF EUROPEAN COMMISSION STUDY

As our inquiry into EU copyright law for the European Commission revealed, four interrelated criteria must be met for an AI-assisted production

4. An updated version of the copyright and neighboring rights chapter of our study was published as P.B. Hugenholtz & J.P. Quintais, *Copyright and Artificial Creation: Does EU Copyright Law Protect AI-Assisted Output?*, 52 INT'L REV. OF INTELL. PROP. AND COMPETITION L. 1190, 1190–1216 (2021).

5. European Commission, Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs, *Making the Most of the EU's Innovative Potential: An Intellectual Property Action Plan to Support the EU's Recovery and Resilience*, COM (2020) 760 final (Nov. 25, 2020). According to the Commission, "the study . . . shows that current EU IP framework and the European Patent Convention appear broadly suitable to address the challenges raised by AI-assisted inventions and creations." *Id.* at 7.

6. Dall-E 2 was released on September 28, 2022. *Dall-E*, WIKIPEDIA, https://en.wikipedia.org/wiki/DALL-E [https://perma.cc/G8VN-MJB4]. ChatGPT was released on 30 November 2022. *ChatGPT*, WIKIPEDIA, https://en.wikipedia.org/wiki/DALL-E [https://perma.cc/E8N5-L95W].

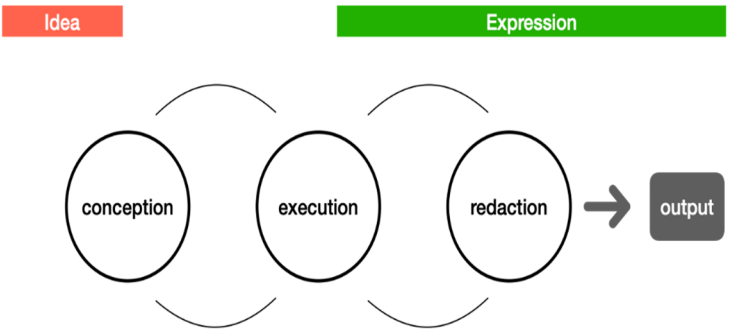
7. *See* Jane C Ginsburg & Luke Ali Budiardjo, *Authors and Machines*, 34 BERKELEY TECH. L.J. 343 (2019); Daniel J Gervais, *The Machine as Author*, 105 IOWA L. REV. 2053 (2019).

8. Edward Lee, *Prompting Progress: Authorship in the Age of AI*, 76 FLA. L. REV. (forthcoming 2025) (available at https://ssrn.com/abstract=4609687).

9. *See* Dan L. Burk, *Cheap Creativity and What It Will Do*, 57 GA. L. REV. 1669 (2023).

to qualify as a protected work: the output is (1) a "production in the literary, scientific or artistic domain" within the meaning of Art. 2 of the Berne Convention; (2) the product of some human intellectual effort; and (3) the result of creative choices by a human author that are (4) "expressed" in the output. Since most AI artifacts will belong to the "literary, scientific or artistic domain" and result from at least some human intellectual effort, in practice, the copyright law analysis will focus on steps 3 and 4.

Based on an analysis of the Court of Justice of the EU's case law, we demonstrated that the core issue is whether the AI-assisted output results from human creative choices that are "expressed" in the output. Inspired by *Eva Maria Painer*—the CJEU's landmark case on the originality of run-of-the-mill photography[10]—we distinguished three phases of the creative process: "conception" (design choices and specifications), "execution" (producing draft versions), and "redaction" (selecting, editing, finalization). See Diagram 1.



[Diagram 1]

While AI systems have largely replaced the role of human authors in the execution phase, the role of human authors at the conception stage remains essential. Moreover, in many instances, human beings will have a creative role during the redaction stage. Depending on the facts of the case, this will allow human beings sufficient scope for creative input. Assuming the author's creative choices are expressed in the final AI-assisted output, the output will qualify as a copyright-protected work.

Applying the analytical framework we developed in our study, we concluded that *The Next Rembrandt*, a portrait in Rembrandt style produced with

10. Case C-145/10, Painer v. Standard VerlagsGmgH, 2011 E.C.R. 2011–00000.

the aid of a neural network trained on Rembrandt's portraits,[11] would qualify as a work of authorship. On the other hand, an AI-assisted sports report produced without any significant human editing would probably not.

According to our study, authorship status will normally be accorded to the person or persons who have creatively contributed to the output. In most cases, this will be the user of the AI system, not the AI system developer, unless the developer and user collaborate on a specific AI production. In that case, there could be co-authorship. If "off-the-shelf" AI systems are used to create content, co-authorship claims by AI developers will also be unlikely for commercial reasons, since AI developers will normally not want to burden customers with downstream copyright claims.

II. COPYRIGHT ISSUES GENERATED BY GENERATIVE AI

While recent U.S. literature, the guidelines of the USCO, and early U.S. case law question the copyrightability of AI-assisted productions, at the time of finalizing this essay, only a single case concerning this issue has been decided by a national court in the European Union.[12] This paucity of litigation is most likely correlated to the absence of copyright formalities and registration systems in most EU countries.[13] Consequently, the copyright status

11. About the technology applied in the project, see Marius Westhof, *The Next Rembrandt*, DIGIT. INITIATIVE (Apr. 21, 2020), https://d3.harvard.edu/platform-digit/submission/the-next-rembrandt/ [https://perma.cc/A2WQ-RR3B]; *see also* ING, *The Next Rembrandt*, YOUTUBE (Apr. 6, 2016), https://youtu.be/pUau6gmdoI4 [https://perma.cc/4A7Q-NSAV].

12. Městský soud v Praze 11.10.2023 (MS) [Decision of the Municipal Court of Prague of Oct. 11, 2023], č.j. 10 C 13/2023-16 (Czech) [hereinafter *Taubel Legal Case*]. Interestingly, a decision by the Beijing Internet Court does seem to apply the criteria set out in the IViR study. *See* LI v. LIU, Beijing Internet Ct. Jing 0491 Min Chu No. 11279 (2023); Yuqian Wang, *Jessie Zhang, Beijing Internet Court Grants Copyright to AI-Generated Image for the First Time*, KLUWER COPYRIGHT BLOG (Feb. 2, 2024), https://copyrightblog.kluweriplaw.com/2024/02/02/beijing-internet-court-grants-copyright-to-ai-generated-image-for-the-first-time/ [https://perma.cc/KN89-Y4JG].

13. Voluntary copyright registration systems do exist in (inter alia) Spain, Italy, and Romania.

of an AI-assisted production can be legally challenged only before the national courts and not—as in the United States—at the earlier registration stage.[14]

A typical feature of the current, first generation of generative AI ("GAI") systems is that users interact with these systems by way of "prompts"—basically, written or aural instructions. This is true not only for large language models such as ChatGPT and Gemini but also for text-to-image "transformer" models such as Dall-E and Midjourney.

The main doctrinal objections against protecting GAI-assisted productions are twofold. One is that prompting a GAI system will not lead to a work of authorship because the "prompter" lacks sufficient control over the expressive features of the output.[15] A distinct but related issue concerns the scope of copyright protection of GAI-assisted productions and the concomitant infringement analysis.[16] In the next section, I will discuss both concerns in light of the findings of our European study.

A. Lack of Creative Control

The principal doctrinal objection to granting copyright protection to productions generated with the aid of GAI systems is that users "prompting" these systems have insufficient control over the expressive features of the productions to qualify the AI outputs as works of authorship.[17] For example, in a letter regarding registration of the "Zarya of the Dawn" graphic novel, the Associate Register of Copyrights of the U.S. Copyright Office wrote:

> A person who provides text prompts to Midjourney does not "actually form" the generated images and is not the "master mind" behind them . . . . The information in the prompt may "influence" generated image, but prompt text does not dictate a specific result . . . . Because of the significant distance between what a user may direct Midjourney to create and the visual material Midjourney actually produces, Midjourney users lack

14. This might lead to asymmetries between copyright protection of AI-assisted productions in the EU and the US. Lee, *supra* note 8.

15. Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence, 88 Fed. Reg. 16190 (Mar. 16, 2023) (to be codified at 37 C.F.R. § 202).

16. Mark Lemley, *How Generative AI Turns Copyright Upside Down*, XXV SCI. & TECH. L. REV. 21 (2023).

17. *See* Jane C. Ginsburg & Luke Ali Budiardjo, *Authors and Machine*s, 34 BERKELEY TECH. L.J. 343, 433 (2019) ("If the user of the machine supplies her creative contribution without influencing how the machine translates that contribution into a final work, then the user does not execute the final work and thus cannot claim authorship."); Daniel J. Gervais, *The Machine as Author*, 105 IOWA L. REV. 2053, 2099 (2019) ("Autonomous and ultimately unpredictable choices . . . made by machines . . . do not cause or generate the type of originality required to obtain copyright protection.").

> sufficient control over generated images to be treated as the "master mind" behind them.[18]

The USCO's registration guidelines reiterate this objection:

> Based on the Office's understanding of the generative AI technologies currently available, users do not exercise ultimate creative control over how such systems interpret prompts and generate material. Instead, these prompts function more like instructions to a commissioned artist—they identify what the prompter wishes to have depicted, but the machine determines how those instructions are implemented in its output. For example, if a user instructs a text-generating technology to "write a poem about copyright law in the style of William Shakespeare," she can expect the system to generate text that is recognizable as a poem, mentions copyright, and resembles Shakespeare's style. But the technology will decide the rhyming pattern, the words in each line, and the structure of the text. When an AI technology determines the expressive elements of its output, the generated material is not the product of human authorship. As a result, that material is not protected by copyright and must be disclaimed in a registration application.[19]

The objection of the Copyright Office and from scholars that informed the Office's policy, such as Professors Gervais and Ginsburg,[20] is essentially that the distance between prompt(s) and AI-generated output is too great. The "prompter" may qualify as the author of the prompt(s) if these are sufficiently original, but not as the author of the final production, since the author had no immediate hand in the expressive features of the final output.

As such, the USCO's position does not contradict the findings of our study. In the three-tier creativity scheme presented in our study (conception-execution-redaction), which was not conceived with prompt-controlled AI systems in mind, the act of prompting would fit in the "conception" stage. Like the USCO, we would not consider an AI-assisted production a work created by the human "prompter" if his or her creative activities were limited to a fairly simple single prompt.

For example, in the *Taubel Legal* case—a test case brought before the Municipal Court of Prague by a local law firm—the plaintiff invoked copyright protection under Czech law for an image resulting from the following prompt: "create a visual representation of two parties signing a business contract in a formal setting, such as a conference room or the office of a law firm

18. Letter from the Associate Register of Copyrights of the U.S. Copyright Off. To Van Lindberg, Counsel for Kristina Kashtanova (Feb. 21, 2023), https://www.copyright.gov/docs/zarya-of-the-dawn.pdf. [https://perma.cc/BK6S-BA9J]; *see also* Lee, *supra* note 8.

19. Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence, 88 Fed Reg. 16190 (Mar. 16, 2023) (to be codified at 37 C.F.R. § 202).

20. Gervais, *supra* note 17; Ginsburg & Budiardjo, *supra* note 17, at 343.

in Prague. Just show the hands."[21] According to the Prague court, this constituted insufficient evidence of human authorship. At best, the prompt amounted to an unprotected idea. Because an AI model itself cannot qualify as an "author," the court denied copyright protection in that case.

However, what the U.S. Copyright Office seems to overlook in its guidelines is that the role of the human user of the GAI system in the creative process is often considerably greater than is assumed in the *Zarya* decision and subsequent guidelines. As we described the AI-assisted creative process in our study, users of AI systems will play a creative role both at the first ("conception") and final stages ("redaction") of the creative process. Both stages allow important creative choices. At the conceptual stage, users of AI systems decide on the genre, style, technique, materials, medium, and format of the desired output.[22] This stage also involves conceptual choices relating to the substance of the work: subject matter (news article, portrait), plot (novel, film), melodic idea (music), functional specifications (software, databases), etc. In a generative AI system, these choices are communicated to the system by way of prompts. At the second stage ("execution"), where the AI system generates (often multiple) drafts in response to the prompts, the creative role of the user is limited. However, in many cases, the human user will have another important role to play in the final phase of "redaction."

"Redaction" involves processing and reworking the drafts into a finalized product ready to be delivered to the market. This final stage involves a wide range of expressive, creative activities, depending on the genre and medium of the production. This stage might start with selecting from multiple drafts the most promising output (judged against the user's subjective standards), and include rewriting, editing, correction, formatting, framing, cropping, color correction, and all sorts of other "post-production" activities that are necessary to give the final touch to the production before it is marketed. Redaction is an underestimated but essential final stage in the creative process, allowing the human author many additional creative choices. As the *Painer* Court has explained, this final phase of the creative process may involve a variety of creative choices.[23] Indeed, depending on the

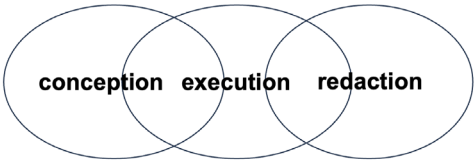
21. *Taubel Legal Case*, *supra* note 12, at 2.

22. Some GAI models can now also assist users by generating prompts. *See* ANTHROPIC, https://docs.anthropic.com/en/docs/build-with-claude/prompt-engineering/prompt-generator [https://perma.cc/4NUA-EXXB]. While this further narrows the "creative space" for human authorship, the role of the human creator at the conceptual level remains essential, as long as GAI systems do not spontaneously produce creative content.

23. Case C-145/10, Painer v. Standard VerlagsGmbH, ECLI:EU:C:2011:239 2011, ¶ 91 (Dec. 1, 2011).

circumstances, creative choice at the redaction stage may even suffice to find originality in the entire production.

In practice, the process of producing creative content with the aid of GAI systems will often be *iterative*. While the executive phase may yield unpredicted results that invite conceptually new or more refined prompts, redaction may also inspire new ideas that feed back to the conceptual level. Diagram 2 illustrates the iterative nature of the prompt-based creative process.



[Diagram 2]

Eventually, the system user will arrive at a result that it will call his or her own. In this iterative process, the "creative distance" between prompts and final expression gradually disappears—by successive prompting in response to early drafts, by selection, by editing, and by adopting the final version as the author's own. Contrary to what the U.S. Copyright Office's guidelines suggest, in cases such as *Zarya*, the fingerprints of the human creator will be all over the final AI-assisted production—more than enough, in our opinion, to qualify it as a work of authorship.

The creative process that the Copyright Office describes as a template for its guidelines does not do justice to the way many creators use GAI systems to create artistic output, as Professor Lee convincingly argues in a recent article.[24] It is, indeed, a reductive caricature that is not very different from the way older creation technologies, such as photography and film, were once depicted.[25]

24. Lee, s*upra* note 8, at 7.
25. *Id.*

Of course, this does not mean that every GAI-generated production will qualify as a copyrightable work under our analysis. Outputs that result from a simple single prompt without subsequent authorial input will probably not qualify as works of authorship. Like the Copyright Office's guidelines, our analysis rules out much of what Dall-E and Chat GPT hobbyists currently produce from copyright protection. However, in contrast to the guidelines, our analysis does allow copyright protection for more intricate GAI-assisted creations.[26]

B. Generative AI and the Idea/Expression Dichotomy

In a recent article, Professor Mark Lemley critically examines the consequences of a "prompt-based copyright system." In GAI-assisted creation, the expressive layer that in the old days represented the human author's main creative contribution is machine-generated, while the role of the human creator is reduced to prompting, that is "asking the right questions, not . . . creating the answers."[27] Professor Lemley argues this "turns copyright law on its head."[28] Generative AI disrupts copyright law in two ways—by shifting the focus of the authorship analysis to "ideas and high level concepts"[29] (prompting) and by undermining the prevailing copyright infringement standard based on similarity of expression.

I agree with Professor Lemley's first point: generative AI challenges the idea/expression dichotomy, "the most fundamental limit on the scope of copyright protection." Indeed, the importance of this principle (in European copyright jargon, the distinction between *content* and *form*) cannot be overstated. However, it is important not to conflate GAI-generated outputs with the "expression" (form) that copyright attaches to. Yes, the GAI system generates many formal elements that would amount to expressive features in a traditional copyrighted work. But underneath this *syntactic* layer, copyright expression (form) has always encompassed deeper authorial layers. Expression at this deeper level includes more abstract and structural authorial contributions, such as storylines (e.g., in novels and screenplays), selection and arrangement (e.g., in collections and compilations of facts), or flow charts in the case of old-fashioned software engineering.

26. *See, e.g.*, LI v. LIU, Beijing Internet Ct. Jing 0491 Min Chu No. 11279 (2023), *translated in* https://english.bjinternetcourt.gov.cn/pdf/BeijingInternetCourtCivilJudgment112792023.pdf [https://perma.cc/NJH4-SPVH] (stock photograph reworked by iteration of prompts deemed work of authorship).

27. Lemley, *supra* note 16, at 190.

28. *Id.* at 196.

29. *Id.*

German doctrine traditionally distinguishes two levels of form: beneath the *external* expression ("aussere Form") lies an *internal layer* ("innere Form")—the structure or fabric ("Gewebe") of interwoven ideas that underlie each work. According to Josef Kohler, the patriarch of European intellectual property doctrine, the essence of the work of authorship lies there—in its internal form.[30] If Kohler were living today, he would probably say that with GAI-assisted creations, the "inner form" results from an iteration of prompts. Copyright extends to both layers of form, whereas the abstract idea that inspired the work remains unprotected. Although Kohler's distinction is more subtle than the binary idea-expression dichotomy, it remains schematic. Especially in the artistic realm, the copyright-protected elements of a work can be found anywhere on a continuum between abstract idea and final expression.

The extensive literature and case law on idea/expression in the U.S. doctrine also acknowledges the permeable border between unprotected ideas and protected expressions, which need not be repeated here.[31] The idea/expression dichotomy is at its most powerful when works communicate information that plainly belongs to the public domain for reasons of public interest, as is the case with news reports, scientific publications, and utilitarian works such as computer programs. Moreover, distinguishing ideas from expression works far better with writings than with visual or musical works.[32] Justice Learned Hand's oft-quoted abstraction test works fine for plays, novels, sports reports, and scientific publications that can be infinitely condensed and abstracted, to the point where the core message (plot, theory, fact) remains as a residue: the unprotected idea.[33] But in the artistic realm, where much of the debate on AI-assisted works is situated and where copyright law has its traditional home, separating idea from expression is more difficult and sometimes even impossible.[34]

In Europe, the emergence of creations low on expression but rich in ideas, such as conceptual art, *objets trouvés*, and early computer art, has led

30. JOSEF KOHLER, DAS AUTORRECHT 168 (1880).

31. Nichols v. Universal Pictures Corp., 45 F.2d 119, 121 (2d Cir. 1930) (statement of J. Learned Hand) ("Nobody has ever been able to fix that boundary, and nobody ever can.").

32. *See* Rebecca Tushnet, *Worth a Thousand Words: The Images of Copyright*, 125 Harv. L. Rev. 684, 688 (2012).

33. *Nichols*, 45 F.2d at 121 (quoting Holmes v. Hurst, 174 U.S. 82 (1899)) ("Upon any work, and especially upon a play, a great number of patterns of increasing generality will fit equally well, as more and more of the incident is left out. The last may perhaps be no more than the most general statement of what the play is about, and at times might consist only of its title; but there is a point in this series of abstractions where they are no longer protected, since otherwise the playwright could prevent the use of his 'ideas,' to which, apart from their expression, his property is never extended.").

34. *See* Mannion v. Coors Brewing Co., 377 F. Supp. 2d 444 (S.D.N.Y. 2006).

to an extensive literature on the essence of copyright-protected works dating back to the 1960s.[35] This literature is gaining new relevance with the challenges that GAI poses to copyright, which are similar in many ways and from which we can learn.[36]

Conceptual creations like these do not easily lend themselves to dissection under the idea/expression dichotomy. The power of the creation, of its art, is mostly in its original conception rather than its—sometimes haphazard or even fleeting—materialization. Combined, conception and materialization should be enough to qualify the artist's creation as a work of authorship. But where, like with Marcel Duchamp's infamous "ready-mades", the artist's conception is presented in a pre-existing form (e.g., an off-the-shelf urinal), copyright protection will necessarily be "thin" (i.e., protect merely against reproduction).

Much of the visual art currently created with the aid of GAI is similarly conceptual. And like with the ready-mades, when the human author's hand in its materialization is minimal—limited to, say, selecting from a handful of drafts the GAI-generated output that is most to the creator's liking—copyright protection should be similarly thin.[37]

Allowing artistic works that are rich in ideas but poor in expression copyright protection of limited scope—rather than no protection at all—makes sense not only doctrinally but also from a policy perspective. Being "useless" almost by definition, art allows artists infinite variety in expressing similar conceptions, thereby minimizing the risk of a merging of idea and expression that would justify denying protection in other realms—say, in software engineering or sports reporting.

In any case, as said, more elaborate GAI-assisted art, such as the *Zarya* imagery or the spectacular *Théâtre d'Opéra Spatial*,[38] which inspired the U.S. Copyright Office's current policy, goes far beyond the merely conceptual. These works of art result from a complex creative interplay between creator and machine, involving hundreds of iterative prompts, countless

35. *See, e.g.*, Friedrich Karl Fromm, *Der Apparat als geistiger Schöpfer*, GEWERBLICHER RECHTSSCHUTZ UND URHEBERRECHT 299, 304 (1964); MAX KUMMER, *DAS URHEBERRECHTLICH SCHÜTZBARE WERK* (1968).

36. Interestingly, even though developments in art have inspired much of these discussions, social norms in the artistic realm often deviate from the norms of copyright in artistic works. *See generally* Lionel Bently & Laura Biron, *Discontinuities Between Legal Conceptions of Authorship and Social Practices: What, if Anything, is to be Done?*, *in* THE WORK OF AUTHORSHIP 237 (Mireille van Eechoud ed. 2014); Anne Collins Goodyear, *Marcel Duchamp, Copyright, and the Emergence of Art as Idea*, 37 AM. ART, 18-23 (2023) .

37. Lemley, *supra* note 16, at 26.

38. *See Théâtre D'opéra Spatial*, WIKIPEDIA, https://en.wikipedia.org/wiki/Th%C3%A9%C3%A2tre_D%27op%C3%A9ra_Spatial [https://perma.cc/644P-ZUNP].

drafts and redrafts, and extensive redaction. They are the product of human creativity at all stages of the creative process and should, in my opinion, be treated no differently than works of photography or traditional visual art.

C. Scope and Infringement

According to Professor Lemley, generative AI challenges yet another doctrine: the test of similarity in copyright infringement cases. Like in the United States, courts in Europe usually infer copying from prima facie similarity. If the defendant's work has an apparent likeness to the plaintiff's, the burden of proof is reversed, and it is for the alleged infringer to demonstrate that there was no copying[39]—usually, a *probatio diabolica*. According to Professor Lemley, because the expressive features of the GAI-assisted work are machine-generated, similarity is no longer probative of copying. The similarity of the second work might as well be the result of independent prompting leading to an identical or similar result.

I agree that this could be problematic where the first work is the result of just a single, simple prompt. While in my own experience recreating a Dall-E generated work even from a single prompt is not an easy task, independent recreation[40] of single-prompt productions is likely to occur. But aren't these precisely the productions that are not (or should not be) copyright protected in the first place—for lack of originality, lack of creative agency, or because ideas are unprotected? With more intricate productions that result from iterative prompting, the chances of independent recreation exponentially decrease. I haven't done the math, but my guess is that the chances approach zero very quickly, just like with traditional works of authorship. So, I am not convinced we really have a problem here.

In a way, GAI-assisted creation may make it easier, not harder, for the courts to deal with cases of similarity. Programs like Dall-E allow users to archive prompts, so if a truly independent "recreator" does get sued, there is a paper trail to disprove copying. The European Union's new rules on AI transparency, which will require providers of AI systems that generate synthetic content to "ensure the outputs of the AI system are marked in a machine-readable format and detectable as artificially generated or

39. For Germany, see Bundesgerichtshof [BGH] [Federal Court of Justice] Feb. 3 1988, Gewerblicher Rechtsschutz und Urheberrecht (GRUR) 812 ("Ein bisschen Friede") (Ger.). For the Netherlands, see Hoge Raad [Supreme Court of the Netherlands] Feb. 21 1992, Nederlandse Jurisprudentie 1993, 164 (MB International BV v Mattel Inc.) (Neth.).

40. German doctrine uses the term *Doppelschöpfung* ("double creation").

manipulated,"[41] may also help courts in future infringement cases. Moreover, with providers of GAI systems under increasing pressure to comply with copyright laws,[42] it is to be expected that providers will install guardrails that prevent or detect possible infringement. GAI-assisted output might in the future be automatically examined for potential infringement—not only against the works in the AI system's corpus of training data but also against its growing output repertory.[43]

As to the substantive infringement analysis, I agree with Professor Lemley that courts need to deal with GAI-assisted output cases carefully and not be deceived by first impressions.[44] Although cases of identical output will be relatively straightforward to judge, assessing cases where the competing works are not identical will be more challenging. Like with traditional works, a plaintiff will need to demonstrate that the defendant misappropriated original features of their work. If the author's creative contribution is limited to a small sequence of prompts with some output selection, the scope of protection will be concomitantly narrow, and perhaps extend only to identical or very similar versions of the work. With more intricate productions, the scope of protection will approximate that of traditional works and, therefore, extend to more distant derivatives. Again, the GAI system's records of the creative process may produce important evidence.

FINAL THOUGHTS

This brings me back to the U.S. Copyright Office registration guidelines. According to these rules, authors of AI-assisted works are obliged to expressly disclaim "AI generated content that is more than de minimis."[45] If, as I argue throughout this paper, the mature GAI-assisted work bears the

41. 2024 O.J. (L 1689) Art 52, ¶ 2. This section of the EU Artificial Intelligence Act states that "[p]roviders of AI systems, including general-purpose AI systems, generating synthetic audio, image, video or text content, shall ensure the outputs of the AI system are marked in a machine-readable format and detectable as artificially generated or manipulated . . . ." *Id.*

42. *See id.* art. 53(1)(c) ("Providers of general-purpose AI models shall . . . put in place a policy to comply with Union law on copyright and related rights . . . .").

43. Note that many GAI systems use output as additional training data.

44. In the EU, the general infringement standard has not been harmonized. Infopaq International A/S v. Danske Dagblades Forening, 2009 I.C.J., Judgment, C-5/08 (Jul. 16, 2009) (holding that, in a case concerning the scope of the right of reproduction, the right extends to those elements of a work "which are the expression of the intellectual creation of the author of the work").

45. Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence, 88 Fed. Reg. 16190 (Mar. 16, 2023) (to be codified at 37 C.F.R. § 202) ("AI-generated content that is more than *de minimis* should be explicitly excluded from the application. This may be done in the 'Limitation of the Claim' section in the 'Other' field, under the 'Material Excluded' heading. Applicants should provide a brief description of the AI-generated content, such as by entering '[description of content] generated by artificial intelligence.'").

mark of human authorship at all levels of the creative process, then the guidelines impose upon the registrant an impossible burden. (Or perhaps I should say: no burden at all, assuming the work contains no content that is fully "AI-generated.")

In any case, the Copyright Office's disclaimer requirement is retrograde. Machines that help authors produce creative works are nothing new. Photography posed similar challenges to copyright in its very early days. But we have accepted long ago that many of the expressive features in a photo or a film are machine-generated—first and foremost, the visual rendering of reality that once was the exclusive domain of the human artist. Does the Copyright Office require photographers to disclaim the "camera-generated" features in a photographic work? I don't think so. In practice, the Copyright Office routinely accepts photographic imagery, as do U.S. Courts.[46]

In the future, which has already started, AI will be built into all kinds of creative machinery. Indeed, the first smartphone cameras equipped with integrated AI capability have already hit the market.[47] The built-in AI performs a variety of functions, ranging from the technical (auto-focus, exposure, color balancing, or noise reduction) to the aesthetic (picture composition, "beautifying" human faces).[48] Should photographers using AI-empowered cameras disclaim those elements as "AI-generated"?

Another question is whether "prompting" as the way we currently interact with GAI systems will be part of that future. The history of technology teaches us that general-purpose machines eventually give way to more dedicated devices. My intuition tells me that there are more productive and satisfying ways for creators to interact with generative AI than by sending the system hundreds of prompts and sorting through thousands of AI-generated drafts. I could imagine an expression engine that allows authors more direct creative control.

46. *See* Mannion v. Coors Brewing Co., 377 F. Supp. 2d at 450 ("Almost any photograph 'may claim the necessary originality to support a copyright.'").

47. David Gewirtz, *The Incredible Evolution of Smartphone Cameras and How AI Powers a Dazzling Future*, ZDNET (Jan. 25 2024) https://www.zdnet.com/article/the-incredible-evolution-of-smartphone-cameras-and-how-ai-powers-a-dazzling-future/ [https://perma.cc/JSW4-DC5Q].

48. *See, e.g.*, *id.*