Michael P. Goodyear
Acting Assistant Professor
Fellow, Engelberg Center on Innovation Law & Policy
New York University School of Law
Furman Hall, 245 Sullivan Street C-35
New York, NY 10012
michael.goodyear@nyu.edu

Hon. Shira Perlmutter
Register of Copyrights
U.S. Copyright Office
101 Independence Ave., S.E.
Washington, DC 20559-6000

Re: Artificial Intelligence and Copyright

Dear Register Perlmutter:

As with many new technological developments throughout history, generative AI presents a balance question for copyright law: how do we preserve the rights of creators without unduly stymying innovation? In submitting this comment in response to the Notice of Inquiry in my individual capacity as a copyright law scholar and an Acting Assistant Professor at New York University School of Law, I hope to offer some considerations and a potential path forward to maintain balance between these goals. Specifically, I respond to your third question regarding potential liability for infringing works generated using AI systems. I highlight the normative and practical disconnects between direct and vicarious liability and generative AI and suggest contributory liability as a potentially useful framework for considering generative AI-based infringement claims.

I. Infringing Inputs vs. Outputs

Before examining liability for infringing outputs, it is important to understand the differences between the two points at which a generative AI system could infringe: the input stage and the output stage.[1]

At the input stage, a generative AI system is trained on a large dataset, often scraped from the Internet.[2] This part of the AI system is an information architecture that is learning from existing content that its programmer compiled in the form of training data. Training an AI model requires tokenizing the contents of training data, which extracts the underlying facts and correlations.[3] During this process, temporary or incidental copies of the data may be created,

[1] Benjamin L. W. Sobel, *Artificial Intelligence's Fair Use Crisis*, 41 COLUM. J.L. & ARTS 45, 61–66 (2017); Andres Guadamuz, *A Scanner Darkly: Copyright Liability and Exceptions in Artificial Intelligence Inputs and Outputs*, SSRN 2 (July 5, 2023), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4371204.
[2] Guadamuz, *supra* note 1, at 4.
[3] Pamela Samuelson, *Generative AI Meets Copyright*, 381 SCI. 158, 159 (July 13, 2023).

which could result in a prima facie infringement claim.[4] While many of the works on which these models are trained are in the public domain or otherwise not protected by copyright, many of the millions to billions of works on which AI systems are trained are copyrightable.[5] For example, a significant number of the 2.3 billion images on which Stable Diffusion was trained were seemingly copyrightable.[6]

The main question for input stage infringement is whether training a generative AI model on copyrighted works is infringing the reproduction right—or, as some lawsuits have claimed, the derivative work right (in the form of the resulting AI model)—or a lawful fair use under 17 U.S.C. § 107. This is the question courts are facing in the plethora of generative AI-related lawsuits across the country. Several scholars have already weighed in on this question of input infringement, offering robust fair use arguments. Mark Lemley, Bryan Casey, Amanda Levendowski, and Matthew Sag argue that training an AI system on copyrighted content is likely highly transformative and relies on the uncopyrightable parts of copyrighted works, such as their underlying facts or grammatical structure.[7] These arguments place generative AI inside a long line of functionally transformative devices and systems that courts have deemed to be fair uses, including search engines, plagiarism checkers, and Google Books.[8]

While these input-side fair use arguments are potent, even if they were to succeed, we would still have the question of whether a particular output is infringing. Generative outputs are a stark break with information architectures, as the system is not just presenting copied content—like the Sony Betamax player, online platforms, or Google Books—but creating something completely new. Fair use may still apply to generative outputs. Peter Henderson et al. posit that AI-generated outputs are likely also fair use so long as they do not copy a substantial portion of a copyrighted work.[9] Sag also suggests that, at present, the attenuated link between training data and outputs generally make generative AI a non-expressive use entitled to fair use.[10] Unlike the input analysis, whether an output is a fair use will likely require individualized examinations of each output.

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[4] *Id.*

[5] Matthew Sag, *Copyright Safety for Generative AI*, 61 HOUS. L. REV. __, 16–17 (forthcoming 2023), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4438593; *see also* Guadamuz, *supra* note 1, at 13–14 (describing how training data can include uncopyrightable items such as facts, numbers, and statistics, and open source material, but also copyrightable works such as text, photographs, music, and art).

[6] Andy Baio, *Exploring 12 Million of the 2.3 Billion Images Used to Train Stable Diffusion's Image Generator*, WAXY (Aug. 30, 2022), https://waxy.org/2022/08/exploring-12-million-of-the-images-used-to-train-stable-diffusions-image-generator.

[7] Mark A. Lemley & Bryan Casey, *Fair Learning*, 99 TEX. L. REV. 744, 770–779 (2021); Amanda Levendowski, *How Copyright Law Can Fix Artificial Intelligence's Implicit Bias Problem*, 93 WASH. L. REV. 579, 619–29 (2018).

[8] *See, e.g.*, Author's Guild v. Google, Inc., 804 F.3d 202, 225 (2d Cir. 2015) (Google Books' search and snippet function was a fair use); Authors Guild, Inc. v. HathiTrust, 755 F.3d 87 (2d Cir. 2014) (providing a searchable database of books and making those books accessible to the visually impaired was fair use); Perfect 10, Inc. v. Amazon.com, Inc., 508 F.3d 1146, 1168 (9th Cir. 2007) (Google Images' use of thumbnail images is likely a fair use); Kelly v. Arriba Soft Corp., 336 F.3d 811, 822 (9th Cir. 2003) (use of thumbnails in a searchable databse was fair use); A.V. ex rel. Vanderhye v. iParadigms, LLC, 562 F.3d 630, 645 (4th Cir. 2009) (copying of student papers to incorporate into a plagiarism checker was fair use).

[9] Peter Henderson et al., *Foundation Models and Fair Use*, 23 J. MACHINE LEARNING RES. 1, 6 (2023).

[10] Sag, *supra* note 5, at 14, 17–31.

These and other scholars recognize that at least a small portion of outputs may not fall within fair use because they are too similar to the original copyrighted works.[11] Because AI systems are able "to accomplish both useful and unfortunate tasks in unexpected ways,"[12] it is likely inevitable that they will perpetrate torts. Robots can and will cause injuries across the gambit, whether unavoidable or deliberate, defect- or misuse-based, unforeseeable or systemic.[13] Copyright infringements too. The (largely unexamined) question, then, is who is liable when these infringing outputs are inevitably created.

II. The Problem of Control

The main complication for determining who is liable for an infringing output is the issue of control. While AI systems are achieving impressive new heights, their increasing complexity and reliance on machine learning is making them black boxes.[14] The path the AI system follows can be complex, messy, unexpected, and inexplainable.[15] Machine learning often incorporates randomness, which can help achieve the best outcome, but at the cost of accountability and reproducibility.[16] AI systems' black box nature means that even their programmers may not be able to precisely predict or explain their outputs.[17] In addition, the more complex or ill-defined the goal, the less stable, predictable, and explainable the AI system's actions will be.[18] Continuous learning by AI systems exacerbates this unpredictability.[19]

Yet the unpredictability of an AI system is a feature, not a fault.[20] It is what enables AI systems to go beyond human capabilities and offer novel outputs.[21] While a simpler algorithm may be understandable, such algorithms are less accurate and have more limited functionality.[22] Instead of following a single formula, machine learning allows AI systems to achieve high-level goals whose solutions are unknown in advance by the human operators.[23] As Harry Surden has noted, older AI systems struggled with more amorphous tasks such as image generation.[24] For

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[11] *See, e.g.*, Lemley & Casey, *supra* note 7, at 766–67; Sag, *supra* note 5, at 14; Henderson et al., *supra* note 9, at 3; Sobel, *supra* note 1, at 65–66.
[12] Ryan Calo, *Robotics and the Lessons of Cyberlaw*, 103 CAL. L. REV. 513, 515 (2015).
[13] *See generally* Mark A. Lemley & Bryan Casey, *Remedies for Robots*, 86 U. CHI. L. REV. 1311, 1327–42 (2019) (describing these types of harms with examples).
[14] Michael L. Rich, *Machine Learning, Automated Suspicion Algorithms, and the Fourth Amendment*, 164 U. PA. L. REV. 871, 886 (2016); Samuel R. Bowman, *Eight Things to Know About Large Language Models*, ARXIV 2–4 (Apr. 2, 2023), https://arxiv.org/pdf/2304.00612.pdf.
[15] Deven R. Desai & Joshua A. Kroll, *Trust But Verify: A Guide to Algorithms and the Law*, 31 HARV. J.L. & TECH. 1, 26 (2017).
[16] Joshua A. Kroll et al., *Accountable Algorithms*, 165 U. PA. L. REV. 633, 653–56 (2017).
[17] P. Bernt Hugenholtz & João Pedro Quintais, *Copyright and Artificial Creation: Does EU Copyright Law Protect AI-Assisted Output?*, 52 IIC – INT'L REV INTELL. PROP. & COMP. L. 1190, 1212 (2021); Anat Lior, *AI Entities as AI Agents: Artificial Intelligence Liability and the AI Respondeat Superior Analogy*, 46 MITCHELL HAMLINE L. REV. 1043, 1057 (2020).
[18] Omri Rachum-Twaig, *Whose Robot Is It Anyway?: Liability for Artificial-Intelligence-Based Robots*, 2020 U. ILL. L. REV. 1141, 1147.
[19] *Id.* at 1148.
[20] Mindy Nunez Duffourc, *Malpractice by the Autonomous AI Physician*, 2023 J.L., TECH. & POL'Y 1, 19.
[21] *See id.* (discussing the benefits of unpredictability in the health AI context).
[22] Rich, *supra* note 14, at 886.
[23] Desai & Kroll, *supra* note 15, at 26.
[24] Harry Surden, *Artificial Intelligence and Law: An Overview*, 35 GA. ST. U. L. REV. 1305, 1324–25 (2019).

these sorts of questions, there is not one right answer. They therefore require more complex and opaque algorithms to achieve the desired result. For example, hard coding an understanding of "dog" as only German Shepherds or Poodles may miss other types of dogs, such as Scottish Terriers and Shetland Sheepdogs, whereas an organic learning process can lead to an AI system recognizing dogs more holistically.[25]

But machine learning achieves this power only by sacrificing control.[26] There are no reliable techniques for researchers or users to reach a specific desired output.[27] Henderson et al. suggested that machine learning researchers should ensure that AI systems create transformative outputs.[28] But even when various precautions are implemented in advance (and they should be), programmers can still not fully predict machine learning outputs.[29] AI models can misinterpret prompts, overrely on specific training material, or suffer from analysis disconnects that could lead to a very different outcome from what the user intended.[30] Indeed, it is difficult or even impossible to establish foolproof guardrails to prevent AI systems from generating specific outputs.[31] Therefore, due to the black box nature of the AI systems, some of these harms will be genuinely unforeseeable despite programmers' best efforts.[32] This unpredictability is AI's greatest strength, but it would also seem to create the very real of risk of copyright infringement liability.[33]

III. The Viability of Different Liability Models

Punishing programmers or users for the inherent unpredictability of generative outputs would seem likely to chill innovation in generative AI, and would be unmoored from a primary purpose of liability: deterring would-be infringers.[34] Guido Calabresi explains that deterrence requires actors to consider the potential costs of their behaviors before engaging in them.[35] If the results are unknown, it is difficult, if not impossible, to consider the risk and act accordingly to avoid it.

a. Direct Liability

[25] *See* Desai & Kroll, *supra* note 15, at 28 (explaining that adding randomness into an AI system can further help it gain a better understanding of the task and address any challenges it encounters).
[26] Lemley & Casey, *supra* note 13, at 1327.
[27] Bowman, *supra* note 14, at 5–6.
[28] Henderson et al., *supra* note 9, at 3.
[29] Lemley & Casey, *supra* note 13, at 1327, 1335.
[30] *Id.*; *see also* Solon Barocas & Andrew D. Selbst, *Big Data's Disparate Impact*, 104 CAL. L. REV. 671, 674–75 (2016) (explaining that algorithms may unintentionally perpetuate discrimination).
[31] *See* Bowman, *supra* note 14, at 6–7 (describing how approaches such as the constitutional AI technique can dramatically reduce explicit examples of the disfavored norms or output,s but that such outputs can still emerge due to the unpredictability of LLMs); *see also* Simon Willison, *I Don't Know How to Solve Prompt Injection*, SIMON WILLISON'S WEBLOG (Sept. 16, 2022), https://simonwillison.net/2022/Sep/16/prompt-injection-solutions ("A big problem here is provability. Language models like GPT-3 are the ultimate black boxes. It doesn't matter how many automated tests I write, I can never be 100% certain that a user won't come up with some grammatical construct I hadn't predicted that will subvert my defenses.").
[32] Lemley & Casey, *supra* note 13, at 1334.
[33] *Id.* at 1335.
[34] STEVEN SHAVELL, ECONOMIC ANALYSIS OF ACCIDENT LAW 297-98 (2009).
[35] GUIDO CALABRESI, THE COST OF ACCIDENTS: A LEGAL AND ECONOMIC ANALYSIS (1970).

Courts have struggled to consistently apply direct copyright infringement liability to algorithms, let alone generative AI. In *Viacom International, Inc. v. YouTube, Inc.*, the Second Circuit applied the DMCA safe harbor because YouTube's algorithm that suggested related videos to viewers was fully automated, suggested user-generated content, and operated only in response to users' actions.[36] In *Davis v. Pinterest, Inc.*, a court in the Northern District of California similarly held that Pinterest's use of an algorithm to show targeted advertisements merely promoted user-generated content and was therefore not directly infringing.[37] But two recent decisions have questioned this approach. In *Stross v. Meta Platforms, Inc.*, a court in the Central District of California remarked, in dicta, that if direct human management of a website would be volitional conduct, the mere fact that such management was done automatically through algorithms should not excuse the platform from liability.[38] The following year, a court in the Northern District of California went further, ruling that the algorithmic publication and display of infringing user-created advertisements could be volitional conduct.[39] These decisions demonstrate the unsettled landscape of when algorithms could suffice for direct infringement.

Applying direct liability in the generative AI context would be even murkier. Should the programmer be liable for any infringement that occurs even despite their best efforts? When if ever, should the users' prompts make the user—rather than the programmer—the direct infringer? Users can engage in adversarial machine learning where they can effectively trick the AI system into certain (infringing) outcomes. Sag, for example, successfully provoked Midjourney and Stable Diffusion to generate likely infringing images of Peanuts' Snoopy, Disney's Mickey Mouse, and Banksy's *Girl with Balloon*.[40] This suggests that the user could be the volitional party that should be held directly liable for an infringement. But the programmer still created the AI system and chose what to including in its training data. And the user, unlike Sag, may not have intended that the system create an infringement.

This presents a significant departure from prior technological volition cases, where volition represents causation.[41] Automated or hands-off systems where the user selects what to copy from across all available media have generally not satisfied the volition requirement without more. This was the case in *Religious Technology Center v. Netcom On-Line Communication Services, Inc.* and *Cartoon Network LP, LLLP v. CSC Holdings, Inc.*, where the mere supply of Internet services and a remote DVR device were not volitional conduct.[42] Similarly, cloud storage providers and website hosts have not met the volition requirement for users' infringements when they merely provided neutral services that did not treat infringing content any differently.[43] But where the platform directed the automated function to engage in

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[36] 676 F.3d 19, 40 (2d Cir. 2012).
[37] Davis v. Pinterest, Inc., 601 F. Supp. 3d 514, 533-34 (N.D. Cal. 2022).
[38] Stross v. Meta Platforms, Inc., No. 21-cv-08023-MCS-AS, 2022 WL 1843129, at *3 (C.D. Cal. Apr. 6, 2022).
[39] Cook v. Meta Platforms, Inc., No. 22-cv-02485-YGR, 2023 WL 6370891, at *5 (N.D. Cal. Jan. 4, 2023).
[40] Sag, *supra* note 5, at 30-31, 34-35; *see also* Guadamuz, *supra* note 1, at 32–33 (remarking that AI tools such as Midjourney or Stable Diffusion often do a good job of replicating famous characters).
[41] Robert C. Denicola, *Volition and Copyright Infringement*, 37 CARDOZO L. REV. 1259, 1268 (2016).
[42] 907 F. Supp. 1361, 1370 (N.D. Cal. 1995); 536 F.3d 121, 131 (2d Cir. 2008).
[43] *See, e.g.*, Disney Enters., Inc. v. Hotfile Corp., 798 F. Supp. 2d 1303, 1308 (S.D. Fla. 2011) (finding no volition where the defendant merely provided server storage); CoStar Grp. v. LoopNet, Inc. 373 F.3d 544, 556 (4th Cir. 2004) (finding no volition by a real estate listings website even where its employees cursorily screened the user-uploaded content); Fox Broad. Co. v. Dish Network LLC, 747 F.3d 1060, 1067 (9th Cir. 2014) ("[O]perating a

specifically infringing acts, the platform was found to have engaged in volitional conduct. For example, in *American Broadcasting Companies, Inc. v. Aereo, Inc.*, the provision of all the copied content by Aereo for profit and in competition with the broadcasters that owned the rights to the content was enough to make it directly liable even though the users chose the specific content.[44] Similarly, MP3tunes engaged in volitional conduct where its program automatically—but at the initial direction of MP3tunes—retrieved album cover art from Amazon for music its users had uploaded.[45] This precedent suggests that where the programmer sets up the AI system to infringe, they could be liable. Likewise, if the user is trying to engage in adversarial machine learning to achieve infringement, they could be the volitional actor.

A much trickier question appears in most cases, where, through no fault of the programmer or user, the AI system infringed. Imposing strict liability in these cases would not serve the goal of deterrence. Many scholars have surmised that other strict liability claims would be a poor fit for AI systems.[46] Holding the programmer or user liable for all infringements generated by the AI system, no matter how predictable, would create a massive disincentive for the generative AI industry. This dilemma is not unprecedented for new technologies. It is common for rightsholders to pursue architectural infringement claims against progenitors of novel technologies that would hold them liable for all infringements of their users (or, in this case, their AI system). Yet courts have consistently rejected these architectural infringement claims, including for the Sony Betamax video recorder and interactive websites with user-generated content.[47] A purely user-operated system, without more, has not been held to give rise to secondary liability, let alone volition or direct liability. This is because such a rule would create a strong disincentive for innovation that extends far beyond the normative rationales for liability. If operating a generative AI system would risk significant liability exposure ranging from $200 to $150,000 per infringing output, few would want to—or could—continue operating.[48] This could significantly curtail generative AI as an industry and would likely, at the very least, limit the viability of new, smaller players entering the field.[49] This would bolster the

system used to make copies at the user's command does not mean that the system operator, rather than the user, caused copies to be made.").

[44] 573 U.S. 431, 451 (2014).

[45] *See, e.g.*, Capital Recs., Inc. v. MP3tunes, LLC, 48 F. Supp. 3d 703, 720 (S.D.N.Y. 2014) ("It was reasonable for the jury to conclude that MP3tunes' volitional conduct—creating a feature to automatically retrieve cover art from Amazon.com—caused the unauthorized reproduction of the Labels' cover art.").

[46] *See, e.g.*, Rachum-Twaig, *supra* note 18, at 1162–64 (finding strict liability too restrictive given the unpredictability of AI outputs); Lior, *supra* note 17, at 1059 ("The ambiguity surrounding AI entities' capabilities and its unpredictable actions and damages, all suggest that even though in its essence an AI entity is a product that is being sold by a company to a consumer, it is not similar enough to be treated as such."); Matthew U. Scherer, *Of Wild Beats and Digital Analogues: The Legal Status of Autonomous Systems*, 19 NEV. L.J. 259, 280 (2018) ("[I]mposition of strict liability could lead to outcomes that seem less than just . . . liability being assigned to parties that had only a highly attenuated influence on the finished system and could not have reasonably foreseen or prevented the harm."); Curtis E.A. Karnow, *Liability for Distributed Artificial Intelligences*, 11 BERKELEY TECH. L.J. 147, 188-191 (1996) (describing issues with establishing human liability for AI-generated outcomes since those outcomes are not necessarily foreseeable).

[47] *See, e.g.*, Sony Corp. of Am. v. Universal City Studios, Inc., 464 U.S. 417, 442 (1984); *Netcom*, 907 F. Supp. at 1365–66.

[48] 17 U.S.C. § 504(c) (statutory damages of $750–$30,000, up to $150,000 for willful infringement, and as low as $200 for innocent infringement).

[49] Jack M. Balkin, *The Path of Robotics Law*, 6 CAL. L. REV. CIR. 45, 53 (2015).

current positions of major technology companies that are at the vanguard of generative AI at the expense of new, innovate would-be entrants.

A potential solution is a largely unconsidered direct infringer: the AI system itself. As Mala Chatterjee and Jeanne Fromer have suggested, since the output is unpredictable, an AI system could be considered to "choose" whether to make a copy.[50] Samir Chopra and Laurence White suggested thinking of two scenarios: where the AI system is a tool of the user and where it is an independent actor or agent.[51] This paradigm is helpful because it looks to the goals of tort liability rather than merely finding a party to renumerate the rights owner. Taking Chopra and White's paradigm a step further, treating the AI system as the direct infringer is promising because it allows us to apply a more flexible secondary liability doctrine like with other historical infringement claims involving new technologies to determine when the programmer should be held liable for infringement because of their actions rather than the unforeseen outputs of an autonomous AI system. This is helpful because secondary liability has "long provided welcome breathing room for new technologies and uses."[52]

b. Vicarious Liability

On first glance, vicarious liability may seem a more appropriate framework for holding programmers liable. Like employees, AI systems are usually not able to compensate injured parties, so vicarious liability would address recoverability. Chatterjee and Fromer, in addition to some other non-copyright scholars, have advocated for vicarious liability as the proper framework on this basis.[53]

But there are two issues with this proposal. First, it is not clear that the programmer even could be vicariously liable. To be vicariously liable, one must both have the right and ability to control the infringement and financially benefit from it.[54] But does a programmer have control over an AI system? The lack of predictability for the outputs would suggest not. As Daniel Gervais has noted (albeit in the context of copyrightability), "the AI machine uses its own insights to create."[55] Online platforms who cannot prevent infringing content from appearing are typically not held to have the requisite control for vicarious liability.[56] Likewise, here, a finding of control would seem uncertain at best.

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[50] Mala Chatterjee & Jeanne C. Fromer, *Minds, Machines, and the Law: The Case of Volition in Copyright Law*, 119 COLUM. L. REV. 1887, 1910–11 (2019); *see also* Rachum-Twaig, *supra* note 18, at 1143 ("This trend and phenomenon is coupled with the unpredictable manner in which such robots behave and the inability to foresee risks that they may inflict.").

[51] Samir Chopra & Laurence F. White, *Tort Liability for Artificial Agents*, *in* A LEGAL THEORY FOR AUTONOMOUS ARTIFICIAL AGENTS 119, 121 (2011).

[52] Rebecca Giblin & Jane C. Ginsburg, *We (Still) Need to Talk About Aereo: New Controversies and Unresolved Questions After the Supreme Court's Decision*, 38 COLUM. J.L. & ARTS 109, 143 (2015).

[53] Chatterjee & Fromer, *supra* note 50, at 1908–09; *see also* Lior, *supra* note 17, at 1071–73; Nunez Duffourc, *supra* note 20, at 28.

[54] Perfect 10, Inc. v. Giganews, Inc., 847 F.3d 657, 673 (9th Cir. 2017).

[55] Daniel J. Gervais, *The Machine as Author*, 105 IOWA L. REV. 2053, 2059 (2020).

[56] *See, e.g.,* Routt v. Amazon.com, Inc., 584 F. App'x 713, 714–15 (9th Cir. 2014) (Plaintiff insufficiently alleged that Amazon could monitor the websites of participants in its affiliate-marketing program and potentially influence the participants' actions and did not allege that Amazon could control or terminate those websites); Luvdarts, LLC v.

If a court did find control, that would spark the second issue: vicarious infringement, like direct infringement, is a strict liability offense.[57] Therefore, it would hold the programmer liable for any resulting infringements just like direct liability. As explained above, this de facto—and potentially widespread—liability would likely discourage generative AI innovation. The goal of vicarious liability to is incentivize use only when the benefits outweigh the costs.[58] But in the case of copyright infringement, where successful claims could result in damages of $150,000 per infringed work, costs could quickly diminish (or even outpace) the benefits.[59] Indeed, vicarious liability may be even worse than direct liability. To be directly liable, a defendant would still need to have volition.[60] Despite its subpar application to AI-generated infringement, volition still provides a more nuanced causation analysis that could prevent an AI system programmer or user from being held directly liable. A vicarious party, however, is held liable for his or her agent's infringements *regardless* of the principal's own volition.[61] The normative mismatch between strict liability and generative AI has led some scholars to conclude that generative AI requires a paradigm shift away from strict liability.[62]

c. Contributory Liability

Contributory liability, comparatively, is a negligence-based standard that more fully considers normative goals since it focuses on fault.[63] Contributory copyright infringement requires knowing about the specific infringement and materially contributing to it.[64] These elements consider the moral dimension of whether a party could have taken an action to prevent specific infringements and failed to do so.[65] Indeed, such a structure was adopted in the context of the Internet in the form of the Digital Millennium Copyright Act ("DMCA") safe harbors, which immunize platforms for any type of copyright infringement claim stemming from the infringements of their users.[66] Among other requirements, the DMCA requires a service provider to expeditiously remove infringing content on its platform once it is reported by the rights owner or the service provider otherwise learns it is infringing.[67] This prevents the platform from being

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AT&T Mobility, LLC, 710 F.3d 1068, 1072 (9th Cir. 2013) (AT&T could not supervise its networks for infringing activity).

[57] Alfred C. Yen, *Third-Party Copyright Liability After* Grokster, 91 MINN. L. REV. 184, 214 (2006).

[58] Chopra & White, *supra* note 51, at 128–29.

[59] 17 U.S.C. § 504(c).

[60] Chatterjee & Fromer, *supra* note 50, at 1910.

[61] EMI Christian Music Grp., Inc. v. MP3Tunes, LLC, 844 F.3d 79, 99 (2d Cir. 2016).

[62] *See, e.g.*, Rachum-Twaig, *supra* note 18, at 1153 (examining how the unpredictability of AI raises material normative problems for applying direct or vicarious liability); Emiliano Marchisio, *In Support of "No-Fault" Civil Liability Rules for Artificial Intelligence*, 1(54) SN SOC. SCI. 11 (2021) (noting the need to shift the discussion about obligations away from producers and programmers when robots can act autonomously from their original design); Anna Beckers & Gunther Teubner, *Responsibility for Algorithmic Misconduct: Unity or Fragmentation of Liability Regimes?*, 25 YALE J.L. & TECH. 76, 80–81, 83–85, 94–95 (2023) (rejecting one-size-fits all approaches to AI liability and proposing looking at the specific use of the AI system and the involvement of the human).

[63] Yen, *supra* note 57, at 214–15.

[64] Perfect 10, Inc. v. Giganews, Inc., 847 F.3d 657, 670 (9th Cir. 2017) (quoting Perfect 10, Inc. v. Visa Int'l Serv., Ass'n, 494 F.3d 788, 795 (9th Cir. 2007)).

[65] Mark Bartholomew, *Copyright, Trademark and Secondary Liability After* Grokster, 32 COLUM. J.L. & ARTS 445, 465 (2009).

[66] *See generally* 17 U.S.C. § 512.

[67] 17 U.S.C. § 512(c)(1)(C).

held liable merely because infringement happens to occur on its platform, instead only requiring action once the specific infringement is known.

The DMCA is not a perfect match, since the programmer could not simply remove the infringing output once it has been reported. Additionally, so-called instance unlearning is a nascent approach, and although it is promising long-term, it currently incurs high computational cost and inaccuracies.[68] Instead, it may be worth considering a modified version of notice and takedown that requires expeditious *revision* of the algorithms to address the learned-of infringement. While the revision will not necessarily prevent all future infringement, even of the same copyrighted work, it puts the onus on the AI system programmer to improve the system once they are away of its specific infringement capabilities. Thus, notice and revision offers a balanced approach that places certain reasonable obligations on the programmer only once they are aware of the problem.

Contributory liability could also be used to capture more nefarious actors who are seeking to infringe through the inducement doctrine. As established by the Supreme Court in *Metro-Goldwyn-Mayer Studios Inc. v. Grokster, Ltd.*, one is liable for infringement if they were "actively inducing" it through "purposeful, culpable expression and conduct."[69] Therefore, a programmer that encourages the use of their AI system as an infringement generation device or a user who actively seeks to have the AI system infringe could be held liable for inducement.

IV. Conclusion

To realize the benefits of AI, we must accept that AI will sometimes be unpredictable and account for that in crafting copyright infringement liability. Direct and vicarious liability fail to account for this unpredictability. Contributory liability, on the other hand, shows potential promise by imposing a duty on the programmer to act once it is aware of the infringement problem. Contributory liability should therefore be considered in addressing the emerging liability gap caused by generative AI. While a departure from direct liability, it remains grounded in both the goals of tort liability and the historical approach of refining existing doctrine to accommodate new technologies. Instead of bluntly chilling innovation in generative AI, it would encourage thoughtful remedial action by AI system programmers to reduce copyright infringement.

Sincerely,

Michael P. Goodyear
Acting Assistant Professor
Fellow, Engelberg Center on Innovation Law & Policy
New York University School of Law
Furman Hall, 245 Sullivan Street C-35
New York, NY 10012
michael.goodyear@nyu.edu

[68] Henderson et al., *supra* note 9, at 29.
[69] 545 U.S. 913, 934–35 (2005).