JIPEL

NYU Journal of Intellectual Property
& Entertainment Law

VOLUME 13 NUMBER 1

Statement of Purpose

Consistent with its unique development, the New York University Journal of Intellectual Property & Entertainment Law (JIPEL) is a nonpartisan periodical specializing in the analysis of timely and cutting-edge topics in the world of intellectual property and entertainment law. As NYU's first online-only journal, JIPEL also provides an opportunity for discourse through comments from all of its readers.There are no subscriptions or subscription fees; in keeping with the open-access and free discourse goals of the students responsible for JIPEL's existence, the content is available for free to anyone interested in intellectual property and entertainment law.

The *New York University Journal of Intellectual Property & Entertainment Law* is published up to three times per year at the New York University School of Law, 139 MacDougal Street, New York, New York, 10012. In keeping with the Journal's open access and free discourse goals, subscriptions are free of charge and can be accessed via www.jipel.law.nyu.edu. Inquiries may be made via telephone (212-998-6101) or e-mail (submissions.jipel@gmail.com).

The Journal invites authors to submit pieces for publication consideration. Footnotes and citations should follow the rules set forth in the latest edition of *The Bluebook: A Uniform System of Citation*. All pieces submitted become the property of the Journal. We review submissions through Scholastica (scholasticahq.com) and through e-mail (submissions.jipel@gmail.com).

The Journal is also available on WESTLAW, LEXIS-NEXIS and HeinOnline.

NEW YORK UNIVERSITY

JOURNAL OF INTELLECTUAL PROPERTY AND ENTERTAINMENT LAW

VOLUME 13 FALL 2023 NUMBER 1

BEYOND INCENTIVES: COPYRIGHT IN THE AGE OF ALGORITHMIC PRODUCTION

ZACHARY L. CATANZARO*

Generative artificial intelligence (AI) systems disrupt longstanding assumptions about creativity, originality, and copyright law. Traditionally, copyright law is premised on an incentive theory—that monopolistic profits motivate human creators to be creative. The theory predicates that, without such protections, human authors would be disincentivized from creating new works in the face of potential free riders upon their creative labors. This framing presumes creativity arises from a human agent with intrinsic intentionality and experiences. Generative AI posits a challenge to copyright's anthropocentric premises. Generative AI systems autonomously generate novel artifacts devoid of human intentionality, lived context, or desire for artistic fulfillment.

As this technology evolves, the marginal cost of automated production trends toward zero. The resulting oversupply of automated content becomes a perfect substitute for human art in the marketplace. Thus, copyright's premise of incentivizing artists through profit motives becomes less relevant. Evaluating machine and human works primarily on substitutability or copyright eligibility ignores ontological differences in how creativity arises. If copyright is to continue to presume that humans are exceptional in the realm of creativity, then it follows that moral rights should become the focus of copyright law. Rather than dilute copyright theory to encompass the automated production of new works, we should reinforce protections for intrinsically human virtues—moral rights, like attribution, integrity, and consent. This preserves

* Zachary L. Catanzaro, Asst. Prof. of Law, St. Thomas University College of Law, Miami Gardens, Florida. Special thanks to Asst. Prof. Cason Schmit, Prof. Robert Cook-Deegan and Prof. Toby Shulruff for their feedback at the 2023 Conference on Governance of Emerging Technologies and Science at ASU Sandra Day O'Connor College of Law; and Prof. Brian Frye for his comments and suggestions.

copyright's anthropocentrism amidst proliferating machine content. As technology challenges long-held theoretical premises, copyright policy should shift its focus from a sparse and increasingly irrelevant incentive theory to upholding humanistic values against non-human creativity.

INTRODUCTION

In June 2023, the music video "At War with the Matrix" featuring "Kanye West" debuted on YouTube.[1] However, Kanye did not participate in creating the song or video.[2] The Kanye featured is an AI-generated facsimile, with deepfake technology simulating his likeness and a synthesizer mimicking his voice and

[1] *See* SLOUCHY, *YANDHI - WAR WITH THE MATRIX (KANYE AI X BIG BABY GANDHI)*, YOUTUBE (June 19, 2023), https://www.youtube.com/watch?v=CGyPqImBOjY [https://perma.cc/SC7Q-5HSH].

[2] *See 'Deepfake' Kanye Video Warns of Disinformation and Civil Unrest: 'AI Will Kill The Media Industry'*, PR NEWSWIRE (July 4, 2023), https://finance.yahoo.com/news/deepfake-kanye-video-warns-disinformation-131100611.html [https://perma.cc/YB9E-ES9Y] [hereinafter *Deepfake*].

style.[3] Hip-hop artist Big Baby Gandhi and filmmaker Laila Rao created the video using the generative AI tool Midjourney to produce surreal depictions and armies of Kanye clones.[4] The video culminates in a scene from *The Matrix* in which Kanye's face is superimposed onto Laurence Fishburne's Morpheus, with AI-dubbed dialogue explaining reality to Keanu Reeves' Neo.[5] This unauthorized AI-generated video provocatively blurs the lines between human creativity and machine artistry.[6]

The music video took seven days to make and cost $30 dollars to produce.[7] In an interview with *Yahoo! Finance*, Big Baby Gandhi said, "[w]e're heading towards an arms race of content, where the stakes for attention are escalating, and the content will get more extreme. . . . The economic incentives upholding the media industry will fall apart."[8] He goes on to claim that, "[i]t's simple supply and demand: when supply goes up, price goes down. AI exponentially increases the supply of high-quality content. Many media professionals will become redundant and lose their jobs. That's the story of AI in every industry."[9]

A few weeks after the release of the AI-generated Kanye West music video, the Screen Actors Guild-American Federation of Television and Radio Artists ("SAG") announced a general labor strike prompted by concerns over allegedly exploitative working conditions as well as apprehensions about potential displacement of human actors by artificial intelligence technologies.[10] The strike was driven in part by concerns that movie studios were seeking irrevocable and permanent assignments of rights of publicity that would allow the use of actors' images, likenesses, and performances in conjunction with generative AI systems.[11] In calling for strike action, SAG aimed to secure enhanced protections for human performers in light of emerging technologies capable of digitally de-aging actors,

[3] The right of publicity implications are beyond the scope of this paper.

[4] *See Deepfake, supra* note 2.

[5] *See* SLOUCHY, *supra* note 1.

[6] It also raises rights of publicity questions beyond the scope of this article.

[7] *See Deepfake, supra* note 2.

[8] *Id.*

[9] *Id.*

[10] *See* Andrew Dalton & The Associated Press, *Writers Strike: Why A.I. is Such a Hot Button Issue in Hollywood's Labor Battle with SAG-AFTRA*, FORTUNE (July 24, 2023, 5:29 AM), https://fortune.com/2023/07/24/sag-aftra-writers-strike-explained-artificial-intelligence/ [https://perma.cc/Y382-W2BZ].

[11] *Id.*

reshooting performances, or even resurrecting deceased stars.[12] At the time of this writing, negotiations between SAG and the studios were still ongoing, with the union underscoring the need to preserve safeguards for "human-created works," including modifications to an actor's "voice, likeness or performance," by means of artificial intelligence.[13]

The AI Kanye video and SAG strike raise questions about copyright's incentive theory. Copyright law grants limited monopolies to incentivize human creativity, assuming output and production would decline without them. But AI challenges this by enabling creative works without human authorship. As AI advances, is copyright's incentive structure still relevant? Can it balance incentives for AI developers and human creators at risk of displacement? Does AI authorship threaten to displace human authorship? Or are we witnessing the emergence of a new medium of expression altogether? After all, "if you can't tell, does it matter?"[14]

I
What is Generative AI Art?

A. Early AI Systems

One of the first known public displays of computer-generated art dates to the 1965 exhibition "Generative Computergraphik," which showcased the work of German mathematician Georg Nees.[15] The field developed relatively slowly until 1973, when Professor Harold Cohen programmed AARON, a set of computer systems designed to produce AI art.[16] AARON was intended to evolve into a system that would eventually become "human-like" and capable of the similar cognitive capabilities similar to those used by us to make, understand, and compose images. Its early outputs, however, offered little distinction between characters and the ground or closed and open forms, with simple manipulation of image structures based on programmed syntax rule sets.[17] Despite Professor Cohen's

[12] *Id.*

[13] *Id.*

[14] *Westworld: Chestnut* (HBO television broadcast Oct. 9, 2016).

[15] Margaret A. Boden & Ernest A. Edmonds, *What is Generative Art?*, 20 Digit. Creativity 21, 23 (2009).

[16] Chris Garcia, *Harold Cohen and AARON—A 40-Year Collaboration*, Comput. Hist. Museum, (Aug. 23, 2016), https://computerhistory.org/blog/harold-cohen-and-aaron-a-40-year-collaboration/ [https://perma.cc/L2XF-TEAT].

[17] *Id.*

early aspirations for stochastic computational realism, the first AARON versions produced very rough abstract images.[18]

As Cohen described in his seminal 1973 essay, "concepts are formed on the basis of prior concepts, decisions are made on the basis of feedback from the environment and from the results of previous decisions."[19] Cohen thus believed that the syntactic relationship between physical characteristics of art (form, line, perspective, composition, and so on) could be reduced to a series of deterministic program code.[20] For this reason, "the probability is that, if one could identify the starting point for an artist's whole life's work, one would find a set of concepts completely formulated if not completely digested, given to him and not initiated by him."[21]

Cohen demonstrated this when he programmed AARON with nearly 4,000 rules for the drawing of a realistic human head, in which he defined a series of symbolic relationship between concepts, such as where a nose should be in relationship to a figure's face.[22] In 1980, Professor Cohen made a breakthrough in his study of young children's drawing behaviors. Applying his earlier developed theory, he realized that he could code redundancies into AARON using a set of pre-existing "core figure[s]," which would assist the system in learning simple strategies for pattern tracing and repetitive composition. This resulted in a marked jump in the "thing-likeness" of AARON's outputs and an artistic consistency (or style) for AARON.

By 1985, AARON had produced a representation of the Statue of Liberty with enough detail that Professor Cohen successfully submitted the work for an exhibition on the history of the Statue. By constructing objects or concepts and defining them in their relationship to one another, the AARON system began producing expressive works that invoked more of a "human-like" or realistic representation of reality in their style and aesthetic. And by 1992, AARON produced a remarkable portrait of Professor Cohen himself.

---

[18] *Id.*

[19] Harold Cohen, *Parallel to Perception: Some Notes on the Problem of Machine-Generated Art*, 4 Comput. Stud. (1973); *see also* Jo Lawson-Tancred, *The Prophecies of Aaron*, Outland (Nov. 4, 2022), https://outland.art/harold-cohen-aaron [https://perma.cc/7LPU-P74Z].

[20] *See* Lawson-Tancred, *supra* note 19.

[21] *Id.*

[22] *Id.*

Figure A[23]

Figure B[24]

[23] Harold Cohen, *Untitled Amsterdam Suite 11*, 1977.
[24] Harold Cohen: *First Athletes, Athlete Series*, 1986.

Figure C[25]

Early rules-based art systems like AARON demonstrated that computer programs could autonomously generate original artistic works. However, these early systems were constrained by their reliance on human-coded rules and datasets. While exhibiting the appearance of some creative capacity, their outputs ultimately reflect their programmers' originality.[26] Much like Searle's Chinese Room thought experiment, these algorithms produced artistic representations without any deeper comprehension of the meaning or significance of their creations.[27] While superficially resembling human artistry, the programs

[25] Harold Cohen: *AARON with Decorative Panel*, 1992.

[26] *See* Lawson-Tancred, *supra* note 19 ("AARON represents a set of outdated responses to the idea of artificial intelligence: a fixation on whether machines are capable of creativity; the pouring of time and energy into making autonomous entities rather than useful tools.").

[27] *See* David Cole, *The Chinese Room Argument*, Stan. Encyclopedia of Phil. (Mar. 19, 2004), https://plato.stanford.edu/entries/chinese-room/ [https://perma.cc/J5HF-6GA7] ("Searle['s Chinese Room] argues that the thought experiment underscores the fact that computers merely use syntactic rules to manipulate symbol strings but have no understanding of meaning or semantics.").

themselves lacked true artistic agency or purpose, remaining limited tools for carrying out the creative visions of their developers. It would require an evolutionary leap in AI for computer systems to advance beyond merely executing preset deterministic programming and instead exhibit more flexible, generalizable, and human-like creative abilities.

B. Machine Learning and Generative AI

In contrast with Professor Harold's deterministically programmed AARON system, modern generative AI systems use stochastic programming.[28] Modern generative models like DALL-E 2, Stable Diffusion, MidJourney, GPT-3, and others employ stochastic machine learning techniques, like neural networks and large language models, trained on massive datasets to find associations and statistical correlations between data points.[29] By looking for correlative patterns, these systems create new outputs that reflect the statistical regularities and averages in their training data sets.[30] After training on vast datasets, these models synthesize novel outputs like images, audio, and text. While influenced by their training data, the most advanced generative models may exhibit emergent creativity in recombining aggregated representations of syntactic concepts.[31] This has profound implications for copyright law.

---

[28] *See* Jon Stokes, *Please Stop Talking About the ELIZA Chatbot*, Blaze (July 24, 2023), https://www.theblaze.com/return/stop-talking-about-eliza [https://perma.cc/UK2R-947V] ("A *deterministic algorithm* is an algorithm that, given a particular input, will always produce the same output, with the underlying machine always passing through the same sequence of states.... Stochastic... refers to the property of being well described by a random probability distribution... In artificial intelligence, *stochastic programs* work by using probabilistic methods to solve problems.").

[29] *See generally* Boden & Edmonds, *supra* note 15. As a new art form, the term "generative AI art" does not have a generally accepted taxonomy. *See id.* ("The names preferred by the artists involved include: generative art, computer art, digital art, computational art, process-based art, electronic art, software art, technological art, and telematics."). I use "generative AI art" as an umbrella term.

[30] *See generally* Letter from U.S. Copyright Off. to Van Lindberg, Esq. (Feb. 21, 2023), https://www.copyright.gov/docs/zarya-of-the-dawn.pdf [https://perma.cc/AQ3N-CGY7] [hereinafter Lindberg Letter].

[31] *See* Daneel Olivaw, *The Impact of Generative AI Art on Society and Culture: Will it Replace Human Artists?*, Medium (Dec. 24, 2022), https://medium.com/@Daneel_Olivaw/the-impact-of-generative-ai-art-on-society-and-culture-will-it-replace-human-artists-ace60691f038 [https://perma.cc/Q3ZD-H4XH].

Machine learning is a multi-step process that starts with the harvesting of large data sets.[32] In a typical machine learning model, data is prepared as a training set, with larger data sets producing better results.[33] From there, a computer programmer chooses a machine learning model to apply to the data set, and instructs that model to train itself to find syntactic patterns to make predictions using stochastic logic.[34] For generative AI models, these data sets are constructed of digital pictures, sounds, movie clips, or text. As it processes information within the data set, the algorithm begins to observe statistical relationships between those points of data.[35] This means that the robustness and accuracy of the initial data—the seed set—can have a tremendous influence on the outputs generated.[36] Additionally, the systems themselves may have limitations imposed upon them by their programmer or owner. In 2022, Stability AI, for example, made changes to Stable Diffusion Version 2 to prevent the generation of "nude and pornographic output, photorealistic pictures of celebrities, and images that mimic the artwork of specific artists."[37]

Users interacting with generative AI art systems start by providing text prompts.[38] Using MidJourney, as an example, the system starts by reducing these prompts into discrete "tokens." These tokens are not parsed for grammar, sentence structure, or semantic meaning.[39] MidJourney does not understand what

[32] *See* Sara Brown, *Machine Learning, Explained*, MIT Sloan (Aug. 21, 2023), https://mitsloan.mit.edu/ideas-made-to-matter/machine-learning-explained [https://perma.cc/2SJG-R6TC]; *see also* Andersen v. Stability AI Ltd., 23-CV-00201-WHO, 2023 WL 7132064, at *2 (N.D. Cal. Oct. 30, 2023) ("Consumers use these products by entering text prompts into the programs to create images "in the style" of artists. The new images are created "through a mathematical process" that are based entirely on the training images and are "derivative" of the training images.").

[33] *Id.* ("In general, none of the Stable Diffusion output images provided in response to a particular Text Prompt is likely to be a close match for any specific image in training data. This stands to reason: the use of conditioning data to interpolate multiple latent images means that the resulting hybrid image will not look exactly like any of the Training Images that have been copied into these latent images.").

[34] *Id.*

[35] *Id.*

[36] *Id.*

[37] James Vincent, *Stable Diffusion Made Copying Artists and Generating Porn Harder and Users Are Mad*, The Verge (Nov. 24, 2022), https://www.theverge.com/2022/11/24/23476622/ai-image-generator-stable-diffusion-version-2-nsfw-artists-data-changes [https://perma.cc/HPQ2-5R9K].

[38] Lindberg Letter, *supra* note 30.

[39] *Id.* (stating generative AI systems are incapable of understanding anything about their inputs); *see also* Larry Hauser, *Chinese Room Argument*, Internet Encyclopedia of Phil., https://iep.utm.edu/chinese-room-argument/ [https://perma.cc/Z8JL-CJHW] ("[N]o matter how intelligent-seeming a computer

a "dragon" is or who "John Oliver" may be.[40] Rather, the system starts "with a field of visual noise, like television static, [used] as a starting point to generate the initial image grids."[41] It then uses algorithms to reduce this noise into an averaged version of human-recognizable images.[42] The process lacks any human input beyond the prompt stage; a human user has no superintendence or knowledge of what outputs the system will create at the time of prompting.[43] Additional prompt engineering can refine or rework the image, but the user still lacks direct superintendence over the produced outputs.[44]

A generative AI art system neither reproduces nor transforms existing works, but rather creates aggregated statistical averages of conceptual representations like "dragon" based on its comparison of all representations of these tokenized concepts. Images are then generated using hashed token representations of other images containing "dragon"-like qualities. A large enough data set creates a statistically representative average "dragon" picture, such that the system has "learned" how to make its own representative "dragon." All without understanding what a "dragon" is. For example, consider DALL-E, which generates images based on text prompts. If a user inputs "John Oliver eating a bag of popcorn with a dragon on his shoulder in the style of Andy Warhol," DALL-E will output images that likely do not exist in its training data (or anywhere, for that matter). And because each generative AI system uses different data sets, their outputs on a particular prompt will vary.

behaves and no matter what programming makes it behave that way, since the symbols it processes are meaningless (lack semantics) to it, it's not really intelligent.").

[40] *See* Stokes, *supra* note 28 ("Humans are pragmatic functionalists about intelligence—they attribute intelligent, conscious, directed behavior of a range of stochastic processes, from weather to slot machines to chatbots—because humanity lacks a sophisticated explanation for consciousness. And because humanity lacks even a minimally satisfactory model of how consciousness arises from matter, we can't say with any confidence which complex configurations of matter are and are not conscious.").

[41] Lindberg Letter, *supra* note 30.

[42] *Id.*

[43] *Id.*

[44] *Id.*

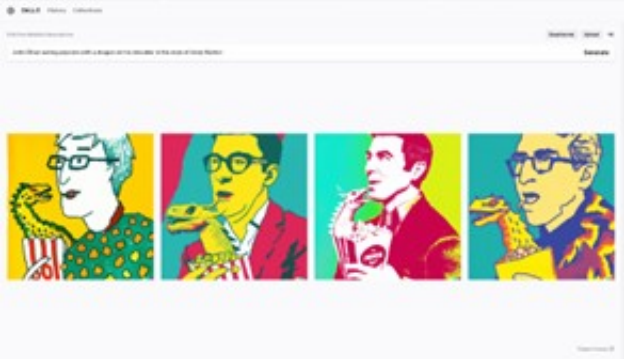


Figure D[45]

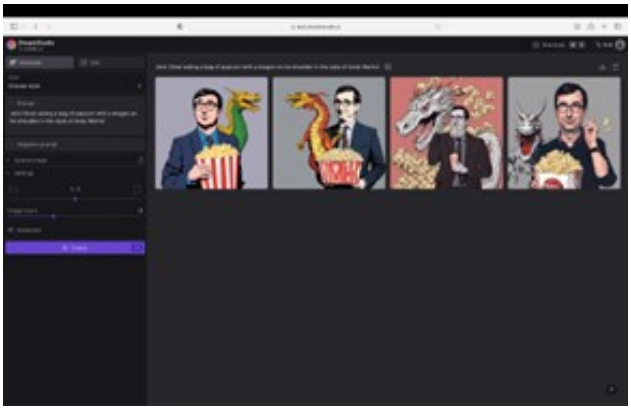


Figure E[46]

While influenced by its training, the system recombines disparate concepts into new works of expression, without any human creativity. So these systems exhibit some degree of autonomous creativity in combining novel data points aggregated from the metadata within a particular large data set to independently create a new work of expression. In this way, generative AI art systems produce works not contained within their initial training data. Unlike rules-based AI confined to recombining predefined elements, these models can extrapolate new visions from "learning." This directly implicates copyright's incentive theory. If AI can autonomously generate original works without monetary motivations or human involvement, the traditional copyright justification may not apply.

[45] Created in DALL-E using the prompt "John Oliver eating a bag of popcorn with a dragon on his shoulder in the style of Andy Warhol."

[46] Created in Dreamstudio using the prompt: "John Oliver eating a bag of popcorn with a dragon on his shoulder in the style of Andy Warhol." https://dreamstudio.com/about/ [https://perma.cc/P2P7-GPEN].

At the prompt refinement stage, a user may reassert superintendence over the generative AI system's outputs. Consider the previous "John Oliver" "Dragon" "eating popcorn" example. DALL-E's output better matched Warhol's style but missed on John Oliver's likeness. Stability better matched John Oliver's likeness but missed on Warhol's style. Using prompt refinement techniques, I can overcome some of the restrictions implemented into each system, such as the bar on producing a work in a particular individual's style. This allows me to refine the works closer to my intent. Other tools, like Photoshop, allow me to turn the output into raw materials for a new work, no different than how a photographer can heavily edit a picture depicting facts from the real work into a work of individualized expression.

But then a definitional problem arises. If I use over 600 prompts in my prompt engineering, at what threshold does the output become mine, if at all? Why is this different from capturing a photograph and editing it with Photoshop tools, themselves being a different form of algorithmic editing? Where is the line between spell check on the one hand and a service like Grammarly and Chat-GPT on the other? If the Copyright Office finds these boundaries difficult to ascertain, the consuming public will likely find it impossible. This raises several challenges to conducting standard infringement analyses in copyright disputes. [47]

Therefore, it is increasingly unclear where the boundary between human and algorithmically generated art is. Developments in technology, starting with photography, have and will continue to blur the line between human and machine authorship. As generative AI systems continue to evolve and the boundary between human and machine erodes, copyright theory must evolve to account for algorithmic rather than incentivized human creation. If the end consumer ultimately cannot discern whether a machine created a work or not, then market substitution is all but assured and market displacement risk grows. Examining this market change is critical as copyright adapts to an age of automated, costless machine creation.

[47] Those issues, like the impact of generative AI on substantial similarity and fair use, are outside the scope of this article.

II
Copyright in Algorithmically Generated Art

A. Copyright Basics

The Constitution's Progress Clause states that "Congress shall have Power . . . To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."[48] Pursuant to this Power, Congress has devised a scheme of copyright protection, currently codified pursuant to the Copyright Act of 1976.[49] The Copyright Act protects "original works of authorship fixed in any tangible medium of expression,"[50] granting to qualifying authors a limited durational monopoly[51] to exploit a bundle of exclusive rights in the copyrighted work.[52]

The Progress Clause is "both a grant of power and a limitation" and Congress "may not overreach the restraints imposed by the stated constitutional purpose."[53] The Supreme Court has said that "[t]he *sine qua non* of copyright is originality."[54] Originality is a constitutional requirement.[55] Originality means that a work is the product of the human mind.[56] Artistic originality is not analogous to copyright

[48] Eldred v. Ashcroft, 537 U.S. 186, 223 (2003) (quoting U.S. Const. art. I, § 8, cl. 8).

[49] 17 U.S.C. §§ 101–1511 (1976).

[50] 17 U.S.C § 102 (1976).

[51] *See* 17 U.S.C § 302 (1976) (defining copyright terms).

[52] *See* 17 U.S.C. § 106 (protecting the copyright owner's right to: (1) reproduce the work; (2) make derivatives; (3) distribute the work; (4) publicly perform the work; (5) publicly display the work; and (6) digitally transmit the work).

[53] *Eldred*, 537 U.S. at 223 (quoting Graham v. John Deere Co. of Kan. City, 383 U.S. 1, 5–6 (1966)).

[54] Feist Publ'ns, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340, 345 (1991).

[55] *Id.* at 346 (citing L. Ray Patterson & Craig Joyce, *Monopolizing the Law: The Scope of Copyright Protection for Law Reports and Statutory Compilations*, 36 Ucla L. Rev. 719, 763 n.155 (1989) (emphasis in original)); Patterson & Joyce, *supra*, at 759–60 n.140; 1 Melville B. Nimmer & David Nimmer, Nimmer on Copyright § 1.06[A] (1990) (stating that "originality is a statutory, as well as a constitutional, requirement"); *id.* at § 1.08[C][1] ("[A] modicum of intellectual labor . . . clearly constitutes an essential constitutional element.").

[56] Letter from Copyright Rev. Bd. to Ryan Abbot, Esq. (Feb. 14, 2022), https://www.copyright.gov/rulings-filings/review-board/docs/a-recent-entrance-to-paradise.pdf [https://perma.cc/V2ZM-A2UG] ("Copyright law only protects 'the fruits of intellectual labor' that 'are founded in the creative powers of the [human] mind.'") (citations omitted) [hereinafter Abbot Letter]; *see also* U.S. Copyright Office, Compendium of U.S. Copyright Office Practices § 313.2 (3d ed. 2014) (stating "the Office will not register works produced by a machine or mere mechanical process that operates . . . without any creative input or intervention from a human author" because under the statute "a work must be created by a human being") [hereinafter Compendium].

originality,[57] nor does originality require novelty.[58] Rather, originality "means only that the work was independently created by the author (as opposed to copied from other works), and that it possesses at least some minimal degree of creativity"[59] or "a modicum of creativity."[60] Importantly, the fact that expressive aspects of the work are independently protected does not extend the copyright privilege to the entire work.[61] Rather, "copyright protection may extend only to those components of a work that are original to the author."[62] This is reflected under longstanding doctrines like the idea/expression dichotomy, which prohibits the monopolization of ideas under the copyright privilege.[63]

The Supreme Court has stated that "[t]he economic philosophy behind the clause . . . is the conviction that encouragement of individual effort by personal gain is the best way to advance public welfare."[64] The author's benefit, however, is clearly a "secondary" consideration.[65] "[T]he ultimate aim is, by this incentive, to stimulate artistic creativity for the general public good."[66] As Justice Breyer explained in his dissent in *Eldred*:

> The [Progress] Clause authorizes a "tax on readers for the purpose of giving a bounty to writers." Why? What constitutional purposes does the "bounty" serve? The Constitution itself describes the basic Clause objective as one of "promot[ing] the Progress of Science," *i.e.*, knowledge and learning. The Clause exists not to "provide a special private benefit," but "to stimulate artistic creativity for the general public good." It does so by "motivat[ing] the creative activity of authors" through "the provision of a special reward." The "reward" is a means,

---

[57] *See* Gracen v. Bradford Exch., 698 F.2d 300, 304 (7th Cir. 1983).

[58] *Feist*, 499 U.S. at 345 ("Originality does not signify novelty; a work may be original even though it closely resembles other works so long as the similarity is fortuitous, not the result of copying.").

[59] *Id.* (citing Nimmer & Nimmer, *supra* note 55, at §§ 2.01[A], [B]).

[60] *Id.* at 346 (citing *In re* Trade-Mark Cases, 100 U.S. 82, 94 (1879)).

[61] *Id.* at 340.

[62] *Id.*

[63] Baker v. Selden, 101 U.S. 99, 105 (1879) (codified at 17 U.S.C. § 102(b) (1976) ("In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work.")).

[64] Mazer v. Stein, 347 U.S. 201, 219 (1954).

[65] United States v. Paramount Pictures, Inc., 334 U.S. 131, 158 (1948).

[66] Twentieth Century Music Corp. v. Aiken, 422 U.S. 151, 156 (1975).

> not an end. And that is why the copyright term is limited. It is limited so that its beneficiaries—the public—"will not be permanently deprived of the fruits of an artist's labors."[67]

Thus, under the U.S. Constitution, "the primary objective of copyright law is not to reward the author, but rather to secure for the public the benefits derived from the authors' labors."[68] And the public benefits twice from copyright: once when the work is created, and later when the work falls into the public domain.

Creating art can be expensive. Before the internet, distributing art was too. Historically, the high costs associated with production and distribution of creative works posed challenges for artists seeking to profit from their labors. In response, copyright law emerged as a means of promoting artistic innovation and dissemination by providing creators with certain exclusive rights over their works for a limited term. Modern Copyright Incentive Theory posits a straightforward exchange between artists and society: in return for producing original works that enrich the cultural landscape, authors are temporally granted bounded monopolies enabling them to profit from their creations. Absent such protections, the theory suggests that artists would lack adequate economic incentive to create, as uncompensated third parties could freely copy and distribute their works. Thus, copyright law aims to remedy market failures stemming from the non-rivalrous nature of artistic goods.

But copyright law never foresaw a post-scarcity marketplace for art. Generative AI art and digital distribution now let machines create, copy, and distribute art for *de minimis* cost. Processing power and storage are the only limits before a deluge of infinite content. How should Congress respond to the coming artistic singularity? Early cases, Congress, and the Copyright Office focus on art's human aspects. If originality requires intention in the mind of a human, then it follows that denying machines protection accomplishes the goals of copyright law. But denying copyright to AI art is aesthetic discrimination masquerading as human exceptionalism. Art does not stop being art just because machines make it. Strictly applying Copyright Incentive Theory to AI art is tricky. Congress wants to reward artists when they create, but generative AI enables free creation. Simply ending our

[67] Eldred v. Ashcroft, 537 U.S. 186, 247 (2003) (Breyer, J., dissenting) (citations omitted).

[68] *Id.* (quoting H.R. Rep. No. 100–609, at 22 (1988), *as reprinted in* 1988 U.S.C.C.A.N. 3706, 3727).

inquiry at machine authorship is insufficient to address these larger public policy concerns, yet it is nonetheless a necessary starting point.

B. Generative AI and Authorship

The Copyright Act does not expressly identify computer programs nor computer-generated works as works of authorship.[69] Rather, human authored computer programs are treated as literary works,[70] and computer-generated works are treated as audiovisual works.[71] Copyright law draws no meaningful distinction between physical and digital copies of a work.[72] Digital information is stored on physical hard drives, such that the act of arranging the bits—the ones and zeros comprising that information—is treated no differently than carving a sculpture or painting a painting. All three acts involve the rearrangement of atoms on a physical medium, and copyright law does not require that any rearrangement of physical matter be perceived by a consumer without the aid of a machine.[73]

The question of whether computers can be authors has received extensive discussion in the literature.[74] The outputs of generative AI models are not the

[69] William F. Patry, *Copyright and Computer Programs: A Failed Experiment and a Solution to a Dilemma*, 46 N.Y.L. Sch. L. Rev. 201, 203 (2003); *see also* 17 U.S.C. § 102.

[70] Patry, *supra* note 69, at 204.

[71] James Grimmelmann, *There's No Such Thing as a Computer-Authored Work - And It's a Good Thing, Too*, 39 Colum. J.L. & Arts 403, 404 (2016) ("A computer-generated work is at some point emitted by a computer, it exists in digital copies, as contrasted with traditional works that exist in analog copies.").

[72] *Id.* at 404.

[73] 17 U.S.C § 102.

[74] *See* Grimmelmann, *supra* note 71 (arguing against computer authorship) (citing Timothy L. Butler, *Can a Computer Be an Author - Copyright Aspects of Artificial Intelligence*, 4 Hastings Commc'ns & Ent. L.J. 707, 739–42 (1982)); Ralph D. Clifford, *Intellectual Property in the Era of the Creative Computer Program: Will the True Creator Please Stand Up*, 71 Tul. L. Rev. 1675, 1685–86, 1694–95 (1997); Evan H. Farr, *Copyrightability of Computer-Created Works*, 15 Rutgers Comput. & Tech. L.J. 63, 79 (1989); Dane E. Johnson, *Statute of Anne-Imals: Should Copyright Protect Sentient Non-Human Creators*, 15 Animal L. 15, 19–21 (2008); Karl F. Milde, Jr., *Can a Computer Be an "Author" or an "Inventor"?*, 51 J. Pat. Off. Soc'y 378, 392–95 (1969); Arthur R. Miller, *Copyright Protection for Computer Programs, Databases, and Computer-Generated Works: Is Anything New Since CONTU?*, Harv. L. Rev. 977, 1056–72 (1993); William T. Ralston, *Copyright in Computer-Composed Music: HAL Meets Handel*, 52 J. Copyright Soc'y U.S.A. 281, 302–03 (2005); Pamela Samuelson, *Allocating Ownership Rights in Computer-Generated Works*, 47 U. Pitt. L. Rev. 1185, 1192–1200 (1986); Andrew J. Wu, *From Video Games to Artificial Intelligence: Assigning Copyright Ownership to Works Generated by Increasingly Sophisticated Computer Programs*, 25 AIPLA Q. J. 131, 155–57 (1997). *But see* Grimmelmann, *supra* note 71, at 404 n.5 (citing Bruce Boyden, *Emergent Works*, 39 Colum. J.L. & Arts 377, 389 (2016)) (arguing that works generated by unpredictable computer programs raise authorship issues that are genuinely different in kind); Annemarie Bridy, *The Evolution*

product of human authorship.[75] So while generative AI systems are capable of producing new (and perhaps novel) works of expression, they do not qualify for protection under the Copyright Act, as they lack human authorship and human originality.[76] As a result, any outputs of generative AI tools immediately fall into the public domain.[77] It was not until fairly recently that anyone claimed that a computer system was capable of authorship.

The first registration application of a generative-AI-authored work occurred on November 3, 2018, when Stephen Thaler filed a copyright registration application for the image "A Recent Entrance to Paradise," which was generated by his AI system, "the Creativity Engine."[78] Thaler did not edit or otherwise contribute to the creation of the picture beyond programming the algorithm. The Copyright Office refused to issue a registration on the grounds that the work lacked a human author. The Copyright Office noted in its letter that "copyright law only protects 'the fruits of intellectual labor' that 'are founded in the creative powers of the [human] mind'" and that it would not register works "produced by a machine or mere mechanical process" that operate "without any creative input or intervention from a human author" because, under the statute, "a work must

of Authorship: Work Made by Code, 39 Colum. J.L. & Arts 395, 396–98 (2016) (giving interesting and challenging examples of works generated by computer programs).

[75] Thaler v. Perlmutter, No. 22-1564, 2023 U.S. Dist. LEXIS 145823, at *8 (D.D.C. Aug. 18, 2023) (citing Mazer v. Stein, 347 U.S. at 214; Urantia Found. v. Kristen Maaherra, 114 F.3d 955, 958–59 (9th Cir. 1997) (holding celestial beings not human, but arrangements of 'revelations' protectable); Penguin Books U.S.A., Inc. v. New Christian Church of Full Endeavor, No. 96-cv-4126 (RWS), 2000 WL 1028634, at *2, *10–11 (S.D.N.Y. July 25, 2000); Oliver v. St. Germain Found., 41 F. Supp. 296, 297, 299 (S.D. Cal. 1941) (finding no copyright infringement where plaintiff claimed to have transcribed "letters" dictated to him by a spirit named Phylos the Thibetan, and defendant copied the same "spiritual world messages for recordation and use by the living" but was not charged with infringing plaintiff's "style or arrangement" of those messages); Kelley v. Chicago Park District, 635 F.3d 290, 304–06 (7th Cir. 2011) (holding garden not product of human authorship); Naruto v. Slater, 888 F.3d 418, 420 (9th Cir. 2018) (holding monkey's photograph not a product of human authorship).

[76] *See* Sara Bro et al., *Author or Algorithm: Recent Developments at the Intersection of Generative AI and copyright Law*, McDermott Will & Emery (Sept. 14, 2024), https://www.mwe.com/insights/author-or-algorithm-recent-developments-at-the-intersection-of-generative-ai-and-copyright-law/ [https://perma.cc/UW37-GJP9] ("The Copyright Office and US courts have repeatedly held that AI-generated work cannot be owned/authored by the AI itself because a valid copyright requires human authorship and creativity.").

[77] *See generally* Andrew Gilden, *Raw Materials and the Creative Process*, 104 Geo. L.J. 355 (2016).

[78] Abbot Letter, *supra* note 56.

be created by a human being."[79] On August 18, 2023, the District Court for the District of Columbia affirmed the Copyright Office's determination, holding that human creativity remains "the *sine qua non* at the core of copyrightability."[80]

Contrast Thaler's claims with those of Damien Riehl and Noah Rubin in 2020, when the duo developed a brute-force algorithm to generate every 8-note, 12-beat melody combination found in Western music theory.[81] "Under copyright law, numbers are fact, and under copyright law, facts either have thin copyright, almost no copyright, or no copyright at all," said Riehl in his TED Talk. "So maybe if these numbers have existed since the beginning of time and we're just plucking them out, maybe melodies are just math, which is just facts, which is not copyrightable." To "fix" the algorithm's resulting work (a requirement of the Copyright Act), the system creates midi-files and saves them onto a hard drive at about 300,000 melodies per second. While their claim has not been tested in Court or at the Copyright Office, the pair hopes to "illustrate that there are a finite number of ways to combine notes to create pop melodies, and these combinations existed before any songwriter actually put them to paper."[82]

Their argument is reductive of the abstraction-filtration-comparison test found in the Second Circuit's decision in *Altai*.[83] Applying the test to a claim of infringement in computer code, the Court held that:

> In ascertaining substantial similarity under this approach, a court would first break down the allegedly infringed program into its constituent structural parts. Then, by examining each of these parts for such things as incorporated ideas, expression that is necessarily incidental to those ideas, and elements that are taken from the public domain, a court would

---

[79] *Id.* (citing COMPENDIUM, *supra* note 56, at § 306 (quoting *In re* Trade-Mark Cases, 100 U.S. 82, 94 (1879)); *see also* COMPENDIUM, *supra* note 56, at § 313.2.

[80] *Thaler*, 2023 U.S. Dist. LEXIS 145823, at *8 (citing Burrow-Giles Lithographic Co. v. Sarony, 111 U.S. 53, 59 (1884)) ("[P]hotographs amounted to copyrightable creations of 'authors' despite issuing from a mechanical device, because the photographic result nonetheless 'represent[ed]' the original intellectual conceptions of the author.").

[81] Matt Binder, *New Algorithm Generates Every Possible Melody to Curb Copyright Lawsuits*, MASHABLE (Mar. 1, 2020), https://mashable.com/article/music-melody-algorithm-midi-copyright [https://perma.cc/BW2A-T9GP].

[82] Peter Cramer, *68 Billion Melodies*, COLUM. J.L. & ARTS: JLA BEAT (Apr. 2, 2020), https://journals.library.columbia.edu/index.php/lawandarts/announcement/view/297 [https://perma.cc/QC43-P3K7].

[83] Comput. Assocs. Int'l, Inc. v. Altai, Inc., 982 F.2d 693, 706 (2d Cir. 1992).

> then be able to sift out all non-protectable material. Left with a kernel, or possible kernels, of creative expression after following this process of elimination, the court's last step would be to compare this material with the structure of an allegedly infringing program. The result of this comparison will determine whether the protectable elements of the programs at issue are substantially similar so as to warrant a finding of infringement.[84]

The pair extend this approach to copyright analysis into its end conclusion. All expression fixed into a material object can be reduced and abstracted to its compositional arrangement of atoms. At what point does random stochastic noise cross the threshold into originality? And if there are only so many arrangements of matter in which a work can be produced from, is anything truly original? Or are we merely discovering facts about the physical world that already exist? If so, that would violate the idea/expression dichotomy.

According to the abstractions-filtration-comparison test, there is some definable point in which random noise crosses into originality. But the boundary is unclear, and, as suggested by the Second Circuit, factually intensive. So, it is more accurate to say that creativity requires intentionality in its constitutive act. Consider Tupper's self-referential formula:

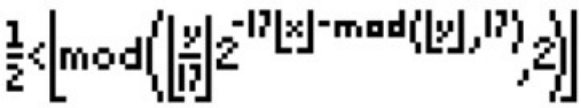
$$\frac{1}{2} < \left\lfloor \mathrm{mod}\left(\left\lfloor \frac{y}{17} \right\rfloor 2^{-17\lfloor x \rfloor - \mathrm{mod}(\lfloor y \rfloor, 17)}, 2\right)\right\rfloor$$

This formula is mathematically unique because it plots itself. Between a certain k and k+17 on the y-axis and between 0 and 106 on the x-axis, the plot of the formula is itself.[85] For k=48584506361897134235820959624942020445814005879832445494830930-850619347047088099284506447698655243648499972470249151191104116057391774078569975432657185544205721044573588368182982375413963433822519945219165128434833290513119319995350241375876523926487461-339490687013056229581321948111368533953556529085002387509285689269455597428154638651073004910672305893358605254409666435126534936364395712556569593681518433485760526694016125126695142155053955-

[84] *Id.*

[85] Margaret Fortman, *Tupper's Self Referential Formula* (June 2, 2015), https://campus.lakeforest.edu/trevino/Tupper_Paper.pdf [https://perma.cc/92FT-6495].

4519153785457525756590740540157929001765967965480064427829131488-
5482599147212485063526866304763 0, if you plot the equation and look at it between a height of k and k + 17 up the y-axis, it gives the plot of the equation:[86]



Copyright law would say that both the formula and the expression of the formula itself contained within the graph of the formula are ideas, unprotectable under the idea/expression dichotomy.

But Tupper's self-referential formula not only plots itself, it plots every 106 × 17 grid of white and black pixels. For example, when k=144520248970897582847942537337194567481277782215150702479718813968549087356829873488882513209057664381788832319769234400166677647492421251289952659070537080204739153208416317920255490054180047-6865720169973046638339490160137431971552099618114524978194501906835950051065780432564080119786755686314228025969420625409608166564-2417367403946384170774537427319606443899923010379398938675025786929455234476319291860957618345432248004921728033349419816206749854-4720381939397385138489604767597826733134376970519945806818698193304463677404726886 4, the plot is:[87]

This image of Pac-Man is not the product of a human mind or human intentionality, but application of mathematical law derived from Tupper's self-referential formula. Applying the abstraction-filtration-comparison test, it is unclear whether these shapes, as derived, would survive a substantial similarity analysis.

[86] *Id.*
[87] *Id.* at 2.

On September 15, 2022, Kristina Kashtanova submitted an application for "Zarya of the Dawn," a comic book they created with the assistance of generative AI tools.[88] Rather than rely solely on the generative AI system to create the final work as Thaler did, Kashtanova used MidJourney to create the raw materials for their work.[89] By treating the output as raw materials that they recombined into a new work, Kashtanova was granted a copyright in their comic book as a compilation.[90] The Copyright Office has taken the position that, where the output of a generative AI system is used as raw material into new expression and a human author superintends that work into a new compilation of materials, Copyright law permits the human author to claim authorship over the final work.[91] So with proper disclosure, a human author, in theory, can claim at least superintendence over the machine's creativity if they contribute sufficient expressive contributions to that first output.

On September 21, 2022, the Copyright Office received an application for digital artist Jason Allen's award-winning, two-dimensional work, "Théâtre D'opéra Spatial."[92] Unlike Thaler, who denied any superintendence over the creation of "A Recent Entrance to Paradise," Allen stated that he used Midjourney and "input numerous revisions and text prompts at least 624 times to arrive at the initial version of the image."[93] Once the initial version was produced, Allen then refined the image using Adobe Photoshop and upscaled it using Gigapixel AI. The Copyright Office initially refused registration on the grounds that Allen's work "inextricably merged, inseparable contributions" from both Allen and Midjourney.[94]

In its January 24, 2023 reconsideration letter, the Office again concluded that the work could not be registered without limiting it to Allen's contributions

[88] Lindberg Letter, *supra* note 30.

[89] *See id.*

[90] *See id.*; 17 U.S.C. § 103

[91] Lindberg Letter, *supra* note 30, at 12.

[92] Kevin Roose, *AI-Generated Art Won an Art Prize. Artists Aren't Happy*, N.Y. Times, (Sept. 2, 2022), https://www.nytimes.com/2022/09/02/technology/ai-artificial-intelligence-artists.html [https://perma.cc/3DSC-78AE]; Letter from Copyright Rev. Bd. to Tamara Pester (Sept. 5, 2023), https://www.copyright.gov/rulings-filings/review-board/docs/Theatre-Dopera-Spatial.pdf [https://perma.cc/3J8F-DZV5] [hereinafter Pester Letter].

[93] Pester Letter, *supra* note 92.

[94] *Id.*

to the work.[95] The Office agreed that the editing in Photoshop showed some creativity on Allen's part, but that the outputs from Midjourney and Gigapixel AI did not.[96] Because Allen sought to register the entire work and not his contributions, the Copyright Office denied registration.[97] Allen filed a second request for reconsideration on July 12, 2023.[98] Allen argued that the Copyright Office failed to account for his "'creative input' into Midjourney, which included 'enter[ing] a series of prompts, adjust[ing] the scene, select[ing] portions to focus on, and dictat[ing] the tone of the image,' is 'on par with that expressed by other types of artists and capable of copyright protection.'"[99] Allen also contended that his use of the AI generative output as raw material should be sufficient for him to claim authorship in the final product.[100] And he asserted that requiring human applicants to disclose every AI tool used in the creative process would be an unreasonable burden on applicants.[101]

The Copyright Office denied Allen's second request for consideration on September 5, 2023.[102] Applying the human authorship standard and existing guidance rules, the Copyright Office found Allen's work "contain[ed] more than a de minimis amount of AI-generated content, which must be disclaimed in an application for registration."[103] The Copyright Office explained:

> If all of a work's "traditional elements of authorship" were produced by a machine, the work lacks human authorship, and the Office will not register it. If, however, a work containing AI-generated material also contains sufficient human authorship to support a claim to copyright, then the Office will register the human's contributions. In such cases, the applicant must disclose AI-generated content that is "more than de minimis." Applicants may disclose and exclude such material by placing a brief description of the AI-generated content in the "Limitation of Claim" section on the registration application. The description may be

[95] *Id.*
[96] *Id.*
[97] *Id.*
[98] *Id.*
[99] *Id.*
[100] *Id.*
[101] *Id.*
[102] *Id.*
[103] *Id.*

> as brief and generic as "[description of content] generated by artificial intelligence." Applicants may provide additional information in the "Note to CO" field in the online application. Applicants are not required to list the AI tools used in the creation of the work.[104]

Yet the Copyright Office's second denial of Allen's work offers inadequate solutions to the wrong problem.[105] The letter's narrow construction of the Copyright Act encourages inaccurate disclosure to the Copyright Office, as authors may fail to disclose AI use to avoid registration refusal. In the case of failing to disclose public domain materials as grounds for cancellation, the proof was straightforward, as a work's fixation or publication serve as the evidence of creation. Disclosure of generative AI systems asks for negative proof: that a machine did not in fact author a work or a portion of a work at any time. Proving this negative can be difficult, and AI detection tools offer no solution.[106]

It also forces difficult line-drawing around the extent of an AI system's contributions. Does spell check offer more than a de minimis contribution? What about Grammarly's editorial function? Why allow Photoshop to delete objects using AI detection tools while denying Gigapixel's upscaling capabilities? The inconsistencies reveal the difficulty in delineating creative collaboration from infringement when AI is involved.

But ultimately, the question of whether a computer can be an author is irrelevant to the purpose of the Copyright Act.[107] The goal of American copyright law is to incentivize the creation of works that benefit the public, not reward authors. It does so by "motivating the creative activity of authors" through "the provision of a special reward."[108] But with the boundary between human and

---

[104] *Id.* (citations omitted).

[105] *See also* U.S. Copyright Off., Copyright Registration Guidance: Works Containing Material Generated by A.I. (2023), https://www.copyright.gov/ai/ai_policy_guidance.pdf [https://perma.cc/U2B3-BCM8].

[106] *See Teaching Center Doesn't Endorse Any Generative AI Detection Tools*, U. Times U. Pitt. (June 22, 2023), https://www.utimes.pitt.edu/news/teaching-center-doesn-t [https://perma.cc/9LP3-NBCJ]. Requiring disclosure of generative AI systems on registration applications also raises questions about independent creation that are beyond the scope of this article.

[107] Nothing in the constitutional boundaries of the Progress Clause would limit Congress from amending the definition of author to include generative AI or other new technologies. Whether it *should* do so is a policy question, not a constitutional powers question.

[108] Eldred v. Ashcroft, 537 U.S. 186, 247 (2003) (Breyer, J., dissenting) (citations omitted).

machine authorship blurring, we must re-evaluate this means-end goal of copyright policy. If AI systems can produce marketable works, then the "reward" should follow the benefit, regardless of human authorship. Rather than starting and ending the inquiry with authorship, copyright doctrine must evolve to maximize public access to creativity, regardless of who or what is acting as an author. Congress has traditionally viewed authorship as a *policy* question, not a metaphysical or teleological one. And that policy question historically had been about Congress using copyright as a tool of competition policy.

C. Generative AI and Fair Use

When considered from a competition policy perspective, the dangers of market substitution come to predominate Getty Images' copyright infringement lawsuit against Stability AI.[109] There, Getty sued over Stability AI's use of 12 million of Getty's copyrighted images and associated metadata from its database to train the Stability generative AI system.[110] At the heart of Getty's complaint are concerns about the risk of market substitution for its licensing deals for its compilation of digital pictures.[111] In Getty's copyright infringement complaint, Getty alleges that this compilation of images took "great expense, over the course of nearly three decades" to assemble.[112] But copyright law does not reward an author's "sweat of the brow."[113] The fact that Getty expended significant time, labor, and expense to compile its database of copyrighted images does not render it per se protectable under the Copyright Act.[114]

Getty's complaint misstates the computational nature of generative AI and the metadata contained within its own database.[115] One of Getty's allegations point to the wholesale copying of metadata as evidence of direct infringement of its

[109] Getty Images (US), Inc. v. Stability AI, Inc., No. 23-cv-00135 (D. Del. filed Sept. 23, 2023).

[110] *See id.*; Dictionary of IBM & Computing Terminology 55–56, www.ibm.com/ibm/history/documents/pdf/glossary.pdf [https://perma.cc/J5ND-EFB7] (defining "metadata" as "data that describes the characteristics of stored data; descriptive data").

[111] Likely to anticipate a fair use defense.

[112] Amended Complaint at 1–2, Getty Images (US), Inc. v. Stability AI, Inc., No. 23-cv-00135 (D. Del. filed Sept. 23, 2023).

[113] Feist Publ'ns., Inc. v. Rural Tel. Serv. Co., 499 U.S. 340, 359–60.

[114] *Id.*

[115] *See* Amended Complaint, *supra* note 112, at 3.

copyrights.[116] But metadata is just uncopyrightable facts about the image file.[117] As explained in the previous section, modern computer systems algorithmically parse and construct many aspects of a file's associated metadata. A digital photograph, for example, may automatically generate information about the image creator, keywords specific to the image, captions, titles, comments, or other information.[118] These types of metadata typically concern the file structure of the digital file in which the image is stored.[119]

Data scraping this information and applying machine learning techniques to it enables generative AI to make entirely new, non-derivative versions of existing works. Generative AI tools are not simply copying the works in the database but making statistical observations about the syntax of the metadata itself. It does not learn meaning (semantics) from its use of the database, but structure. In theory, generative AI tools utilize vast datasets of existing works to identify patterns and correlations in the metadata—information about the works such as keywords, captions, titles, style tags, etc. The tools employ statistical methods to discern averages and tendencies about how these metadata elements relate to one another across the dataset. In this way, the tools are not directly copying or deriving from any one specific work, but rather discovering symbolic rules about how the

[116] *See id.* at 20; *see also* Kadrey v. Meta Platforms, Inc., No. 23-CV-03417-VC, 2023 WL 8039640, at *1 (N.D. Cal. Nov. 20, 2023) (citing Litchfield v Spielberg, 736 F.2d 1352, 1357 (9th Cir. 1984)) ("The plaintiffs are wrong to say that, because their books were duplicated in full as part of the LLaMA training process, they do not need to allege any similarity between LLaMA outputs and their books to maintain a claim based on derivative infringement. To prevail . . . the plaintiffs would indeed need to allege and ultimately prove that the outputs "incorporate in some for a portion of" the plaintiffs' books."); Andersen v. Stability AI Ltd., No. 23-CV-00201-WHO, 2023 WL 713206, at *7–8 (N.D. Cal. Oct. 30, 2023) ("[T]he alleged infringer's derivative work must still bear some similarity to the original work or contain the protected elements of the original work."); 2 Melville B. Nimmer & David Nimmer, Nimmer on Copyright § 8.09 (Matthew Bender rev. ed. 2023) ("Unless enough of the preexisting work is contained in the later work to constitute the latter an infringement of the former, the latter, by definition, is not a derivative work"); 1 Melville B. Nimmer & David Nimmer, Nimmer on Copyright § 3.01 (Matthew Bender rev. ed. 2023) ("A work is not a derivative unless it has substantially copied from a prior work.").

[117] *See* Amended Complaint, *supra* note 112, at 20.

[118] Of course, the metadata that Getty has sued over was almost entirely autonomously generated by a computer algorithm.

[119] This includes camera model and make and information that varies with each image such as orientation (rotation), aperture, shutter speed, focal length, metering mode, and ISO speed information. *See* CamJapan Elec. Indus. Dev. Ass'n, Digital Still Camera Image File Format Standard (version 2.1 1998), https://web.archive.org/web/20131111073619/http://www.exif.org/Exif2-1.PDF [https://perma.cc/7FPH-7WZN].

metadata can be recombined in novel ways according to the overall statistics of the dataset.

The tools then apply these rules to generate new metadata pairings and compositions. While the output contains symbolic structures reminiscent of the original dataset, the semantic meaning is emergent rather than copied. The key principles are that the tools do not learn the meaning, only the relationships between structural patterns, as they leverage statistics across the dataset rather than deriving from any singular work. Through this process of discerning and applying abstract rules about metadata composition, the generative AI tools can produce original works that do not directly copy or infringe upon any one existing work.[120]

So, if Getty cannot claim copyright in its metadata as raw facts, it cannot object to the stochastic averaging of these facts into something new, any more than Rural Telephone Service in *Feist* could complain about the copying of raw facts contained in its phonebook.[121] Like those phonebook listings, metadata provides the raw materials for new expressions. Art builds upon the works of predecessors. Students study masters, learning associations and developments from centuries of practice, eventually recombining discrete data points into unique interpretive styles. Similarly, generative AI systems do not merely capture moments like photographs. They "learn" as does a student who mimics their masters.

Copyright is structured to disseminate this metadata about art to future creatives. Without the reproduction of material objects, the incentive theory argues that insufficient production of copies of expression will prevent future artists from developing artistic study and creating new works of expression. The end goal is not encouraging expressive labors but a specific marketplace for expression, one in which transaction costs are kept low in a marketplace that encourages the free exchange of ideas. For this reason, strictly requiring human authorship is an aesthetic judgment that reads the "sweat of the brow" theory back into conversations about the extent to which machines can possess or exhibit creativity. The deeper concern is, and should be, that costless AI art will displace economic

[120] I recognize the need for further empirical study of this assertion but note that it is outside the scope of this paper.

[121] Getty's complaint conflates two separate acts of alleged reproduction, the necessary reproduction of works in the training set for the generative AI system and the reproduction that occurs when the system results in a new output. *See generally* Amended Complaint, *supra* note 112.

incentives for human creativity, which can in turn harm the very incentives that drive humans to create art.

Within its copyright infringement complaint, Getty offered the following photograph as evidence of direct copying:

Figure F[122]

Getty points to similarities in the composition and the appearance of a distorted watermark as evidence of the generative AI system's direct copyright infringement.[123] But this ignores that the associated metadata is itself factual in nature and that the Getty Images watermark is not a copyrightable work of expression.[124] As noted above, Stability did not slavishly copy the demonstrative photograph. It amalgamated metadata about the indexed photographs contained in the Getty Images database then independently created its own new work based on the calculated averages of what a tokenized representation of a photograph of a soccer game should contain.[125] If the picture depicts two players in a contrasting dark and light soccer jersey, it's because the average photograph of soccer players

[122] Amended Complaint, *supra* note 112, at 20.

[123] *See id.* at 19–20. The watermark is not evidence of direct copying, as Getty alleges, but arguably falls under the doctrine of copyright estoppel/asserted truths. Getty may find better relief in an allegation of trademark dilution or under § 1201 of the Digital Millennium Copyright Act ("Circumvention of copyright protection systems"). Such arguments are outside the scope of this article.

[124] *See* Corbello v. Valli, 974 F.3d 965, 974 (9th Cir. 2020) ("Similarity only as to unprotected aspects of a work does not result in liability for copyright infringement.").

[125] *See id.* There, the Ninth Circuit explained:

> The extrinsic test requires a three-step analysis: (1) the plaintiff identifies similarities between the copyrighted work and the accused work; (2) of those similarities, the court disregards any

does.[126] Getty's arguments simply rehash those that failed to overcome Google's fair use defense in the Google Book Indexing Case, *Authors Guild v. HathiTrust*.[127] Those arguments about substantial similarity lead to the same conclusion—there are only so many ways to depict a soccer game. To the extent that Getty relies on these narrow facts within its complaint, the Court should discount those as *scenes a faire* or under the merger doctrine.[128]

Getty's argument represents an impermissible aesthetic claim regarding AI mimicking a photographic style for soccer players. Copyright law protects specific original works, not general styles or aesthetics.[129] Just as Warhol's estate cannot prohibit others from adopting Warhol's signature styles, Getty cannot monopolize the marketplace for photographs depicting a soccer game. Generative AI prompts questions around human creativity's scope, though style itself falls squarely in the public domain. AI may independently reproduce works evoking a given aesthetic (to the extent they have not been limited by their programmers), but this market substitution does not implicate copyright absent actual infringement. Utilitarian copyright assumptions that incentives spur human creation are still challenged. However, copyright was never intended to monopolize

---

that are based on unprotectable material or authorized use; and (3) the court must determine the scope of protection ("thick" or "thin") to which the remainder is entitled "as a whole."

It is in the second prong of the test that Getty's complaint fails. None of the generated outputs of the system had appropriated any protectable expression from Getty's image. The subjective view argument raised in Getty's complaint is not raised until the intrinsic examination that follows the extrinsic test. Because Getty cannot show the requisite appropriation, its claim should fail.

[126] FIFA regulations require this. *See* FIFA Equipment Regulations 16, 6.2.1 https://digitalhub.fifa.com/m/7474d3addab97747/original/FIFA-Equipment-Regulations_2021_EN.pdf [https://perma.cc/67K7-XKYM] (listing 126 pages of FIFA Equipment color regulations).

[127] While outside the scope of this paper, such a use of the data scraping associated metadata should be treated as fair use. *See generally* Authors Guild v. HathiTrust, 755 F.3d 87 (2d Cir. 2014).

[128] *See* Atari, Inc. v. N. Am. Phillips Consumer Elecs. Corp., 672 F.2d 607, 616 (7th Cir. 1982) (quoting 3 Melville B. Nimmer & David Nimmer, Nimmer on Copyright § 13.03(A)(1) (1981)) ("[S]imilarity of expression, whether literal or nonliteral, which necessarily results from the fact that the common idea is only capable of expression in more or less stereotyped form will preclude a finding of actionable similarity."); Morrissey v. Proctor & Gamble Co., 379 F.2d 675, 678 (1st Cir. 1967) (holding that where there is "one form of expression, [or] at best only a limited number [of ways to express an idea or system], to permit copyrighting would mean that a party or parties, by copyrighting a mere handful of forms, could exhaust all possibilities of future use of the substance.").

[129] Steinberg v. Columbia Pictures, 663 F. Supp. 706, 715 (S.D.N.Y. 1987).

stylistic concepts, only particular expressions.[130] While the implications of AI art merit examination, copyrightability thresholds remain grounded in specific original works of authorship. Unless AI replicates protected elements rather than uncopyrightable style, copyright law maintains vital boundaries limiting monopolies to discrete creations. This upholds its purpose of promoting creative progress, not rewarding authors. AI expands expression at copyright's frontiers, but stylistic claims exceed its legal limits.

An objection to this argument is found in my prior example of John Oliver depicted in the style of Andy Warhol. On first appearance, the associated metadata of "John Oliver" does not neatly fit within my prior argument. There are many ways to express a picture of a dragon, there are fewer to depict the British comedian. But the likeness of John Oliver, in a copyright sense, is simply a fact about the physical world—that is, an unprotectable fact.[131] However, while the celebrity's likeness itself may be unprotectable, this example exposes subtle complexities around AI mimicking distinctive stylistic flourishes. While copyright protects specific original works, not general style or aesthetic, the line blurs when an AI model is explicitly trained on a narrow artist's *oeuvre* rather than generalized creative concepts. This raises complex questions around derivative works and transformative fair use when the input data and parameters narrow substantially, even if the output differs.[132] So a nuanced re-evaluation of the Copyright Incentive Theory is needed

[130] *See* Richard A. Posner, *Intellectual Property: The Law and Economics Approach,* 19 J. Econ. Persps. 57, 68 (2003), https://pubs.aeaweb.org/doi/pdfplus/10.1257/0895330054048704 ("A legal monopoly is not necessarily an economic monopoly; if close substitutes exist for a patented product, the patent may confer little power over price.").

[131] *See* Burrow-Giles Lithographic Co. v. Sarony, 111 U.S. 53, 59 (1884); *see also* Meshwerks, Inc. v. Toyota Motor Sales U.S.A., Inc., 528 F.3d 1258, 1270 (10th Cir. 2008). Whether John Oliver has a right of publicity claim for generative AI depictions of him is beyond the scope of this article.

[132] While these legal issues are beyond the scope of this article, Nelson Goodman's *Languages of Art* best educes this distinction. Katherine Thomson-Jones & Shelby Moser, *The Philosophy of Digital Art*, Stan. Encyclopedia of Phil. (Oct. 11, 2022), https://plato.stanford.edu/cgi-bin/encyclopedia/archinfo.cgi?entry=digital-art [https://perma.cc/RT4M-D6KS]. A broad, structuralist interpretation of what is "art" supports the economic foundations of the Copyright Incentive Theory. After all, if all "art" is reductive to its syntactic structures, any machine that is capable of fixing a digital work must contain all the possible constructions of those necessary tokenized syntactic representations of "art." If copyright's goal is to maximize the production of reproductions of works into material objects fixed with those tokenized representations of reality, then any computer capable of producing an output must be capable of producing *all* outputs within the boundaries of its data set. If we were to accept this proposition as true, then it would necessarily follow that human exceptionalism does not exist in originality. There is ongoing research in the field of neuroscience

in response to AI models mimicking, but not appropriating, highly-specific human styles and expressions.[133] If economic incentives prove increasingly irrelevant in an age of machine creativity, copyright's foundational premises warrant reevaluation. Generative AI's implications extend beyond specific instances of infringement, calling into question the theoretical basis for copyright itself—the Copyright Incentive Theory.

D. Incentives and Post-Scarcity

The copyright monopoly represents a *quid pro quo*—rights holders temporarily control the exploitation of works in exchange for their eventual addition to the public domain.[134] The copyright monopoly, limited by traditional hostility toward monopolization, aims to stimulate creativity for public benefit rather than provide private windfalls.[135] The dominant American legal theory justifying this "reader's tax" is the Copyright Incentive Theory, which remedies an identified market failure.[136] Copyright makes the reward to the author a secondary consideration as a result.[137] It is "intended . . . to allow the public access to the products of [authors'] genius after the limited period of exclusive control has expired."[138] It does not "provide a special private benefit,"[139] but rather exists "to stimulate artistic creativity for the general public good"[140] and to promote

on animal creativity. *See, e.g.*, Dahlia W. Zaidel, *Creativity, Brain, and Art: Biological and Neurological Considerations*, Frontiers in Hum. Neuroscience, June 2, 2014, at 2 (listing brain size, neurotransmitters, intelligence level, ecological niches, and personality attributes as creativity-related factors which have already been identified). Notably, the neuroscientist Dahlia Zaidel suggests that the key difference between animal and human creativity lies in the cultural function of human art, *id.*, which supports the Copyright Incentive Theory argument.

[133] *See* Posner, *supra* note 130.

[134] Eldred v. Ashcroft, 537 U.S. 186, 224–25 (2003) (Stevens, J., dissenting).

[135] *Id.*

[136] *Id.* at 245 (Breyer, J., dissenting).

[137] *See* Mazer v. Stein, 347 U.S. 201, 219 (1954); *see also* L. Ray Patterson, *Understanding the Copyright Clause*, 47 J. Copyright Soc. 365, 379 (2000); L. Ray Patterson, Copyright in Historical Perspective 144–47 (1968); Madison on Monopolies 756–57; Papers of Thomas Jefferson 442–43; The Constitutional Convention and the Formation of the Union 334, 338 (Winton U. Solberg ed., 2d ed. 1990).

[138] Sony Corp. of Am. v. Universal City Studios, Inc,, 464 U.S. 417, 429 (1984).

[139] *Eldred*, 537 U.S. at 242 (Breyer, J., dissenting) (quoting *Sony*, 464 U.S. at 417, 429).

[140] *Id.* (quoting Twentieth Century Music Corp. v. Aiken, 422 U.S. 151, 156 (1975)).

the creation and dissemination of information.[141] Were it not, copyright would be outside the boundaries of Congress' constitutional authority.[142]

The Theory offers a remedy to an identified form of market failure. It argues that when things are scarce, they become more subjectively valuable.[143] So the theory holds that the scarcer property is, the more valuable it becomes to consumers.[144] The scarcity of the capital and labor resources is needed to make a good inference regarding how scarce the property is. Economists call these the "factors of production"—labor, capital, land, and entrepreneurship.[145] Each is required, in differing amounts, to produce tangible property.[146] And each of the factors is scarce depending on the type of goods being produced.[147]

Intangibles are different as they lack natural scarcity.[148] Expressions are intangibles that are freely copyable. My enjoyment of a book does not diminish your enjoyment or use of the same book.[149] For this reason, once expressions

[141] *Id.* at 244 (Breyer, J., dissenting).

[142] *Id.* at 247 (citing H.R. Rep. No. 2222, at 6–7 (2d Sess. 1909)).

[143] Ruth Towse et al., *The Economics of Copyright Law: A Stocktake of the Literature*, 5 Rev. Econ. Rsch. on Copyright Issues 1, 2 (2008), https://core.ac.uk/download/pdf/4897291.pdf [https://perma.cc/C9VK-WVGS] (quoting Gillian K. Hadfield, *The Economics of Copyright: A Historical Perspective*, 38 A.S.C.A.P. Copyright L. Symp. 1, 29–30 (1992)) ("[T]he effect of a monopoly is to make articles scarce, to make them dear, and to make them bad. . . . It is good that authors be remunerated; and the least exceptional way of remunerating them is by a monopoly.").

[144] Mark A. Lemley, *IP in a World Without Scarcity*, 90 N.Y.U. L. Rev. 460, 460 (2015) https://ssrn.com/abstract=2413974 [https://perma.cc/S4MX-3DWF].

[145] *See generally* Adam Smith, An Inquiry into the Nature and Causes of the Wealth; of Nations, of the Component Parts of the Price of Commodities (S.M. Soares. ed., 2007) (1776).

[146] *See* U. Minn., Principles of Economics 28 (2016) (Univ. of Minn. Librs. ed., 2011), https://open.lib.umn.edu/principleseconomics/ [https://perma.cc/GEM6-JTS9].

[147] Julia Kagan, *Subjective Theory of Value: Definition, History, Examples*, Investopedia (Oct. 31, 2021), https://www.investopedia.com/terms/s/subjective-theory-of-value.asp [https://perma.cc/GNX8-CM8D].

[148] *See* Mark Lemley, *IP in a World Without Scarcity*, 90 N.Y.U. L. Rev. 460, 482 (2015); *see also* Smith, *supra* note 145 ("Value, it is to be observed, has two different meanings, and sometimes expresses the utility of some particular object, and sometimes the power of purchasing other goods which the possession of that object conveys.").

[149] *See* Letter from Thomas Jefferson to Isaac McPherson (Aug. 13, 1813), *in* 6 The Papers of Thomas Jefferson 379, 384 (J. Jefferson Looney ed., 2009) ("He who receives an idea from me, receives instruction himself without lessening mine; as he who lites his taper at mine, receives light without darkening me.").

are created, they belong to the public.[150] Economists call this a "public good."[151] When intangibles become widely available to the public, one market effect is an increase in free riders.[152] Why would you pay an author for creating a work of expression when you can freely copy it?[153] But if you are not willing to pay, then authors will not be willing to invest their capital and labor into creating new works. The result is market failure.[154] So the Copyright Incentive Theory offers artificial scarcity as a way of fixing this market failure.[155] Copyright creates artificial scarcity by tying freely copyable intangible expressions to monopolies in scarce material objects.[156] Copyright does not protect expression *per se*, nor creativity as an act of social utility; it protects specific fixations of expressions onto material objects in the hope of encouraging future creativity.[157] It does not protect *anyone* selling these expressions, but rather uses specific market structures to create artificial scarcity and thus incentivize creative expression.

Scarcity of a thing does not make it intrinsically valuable.[158] Value is not intrinsic to things but is instead based on the consumer's perceived subjective marginal utility.[159] Economists offer the diamond-water paradox to explain why.[160]

---

[150] Copyright Law: A Handbook of Contemporary Research 154 (Paul Torremans ed. 2009)

[151] *See* Jason Fenando, *What Are Public Goods? Definition, How They Work, and Example*, Investopedia (Mar. 20, 2022), https://www.investopedia.com/terms/p/public-good.asp [https://perma.cc/52TN-G7Z8] (defining a public good as a commodity or service that is made available to all members of society).

[152] *See generally* Mark Lemley, *Property, Intellectual Property, and Free Riding*, 83 Tex. L. Rev. 1031 (2004), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=582602 [https://perma.cc/7E7N-2ZLY].

[153] Russell Hardin & Garrett Cullity, *The Free Rider Problem*, Stan. Encyclopedia of Phil. (Oct. 18, 2020), https://plato.stanford.edu/entries/free-rider/ [https://perma.cc/8TPP-RRVA].

[154] *See* William M. Landes & Richard A. Posner, The Economic Structure of Intellectual Property Law 37 (2003); William M. Landes & Richard A. Posner, *An Economic Analysis of Copyright Law*, 18 J. Legal Stud. 325, 326 (1989).

[155] Towse et al., *supra* note 143, at 4 (citing Richard Caves, Creative Industries: Contracts Between Art and Commerce (2000)) ("The typically high sunk cost of producing copyrightable works, for which the variable costs are often low, makes marginal cost pricing impossible for the profit-maximising producer and gives rise to the specific features of the creative industries in which these works are utilised.").

[156] *See* Lemley, *supra* note 148.

[157] 17 U.S.C. § 102.

[158] *See generally* Kei Shibata, *THE SUBJECTIVE THEORY OF VALUE AND THEORIES OF THE VALUE OF MONEY*, 6 Kyoto U. Econ. Rev. 71 (1931), https://repository.kulib.kyoto-u.ac.jp/dspace/bitstream/2433/125198/1/ecb0061_071.pdf [https://perma.cc/DVQ8-3C5T].

[159] *Id.* at 81.

[160] *See* Smith, *supra* note 145, at 26.

Water has greater social utility, but diamonds are more expensive.[161] Diamonds have aesthetic and industrial utility, but we die without water. So why are diamonds worth more? If value was determined solely by intrinsic utility, then water would be more expensive. But the value of diamonds and water is a function of the scarcity of the factors of production needed to create and consume a unit of either, not a function of their corresponding social utility. It is generally much harder to locate and mine diamonds and cut them into gems than it is to pump water from the ground or collect it from the rain.[162] At the microeconomic level, what matters is not the general utility of a good in the marketplace, but the immediate consumer's preference for it.[163] A diamond commands a much different price to shoppers in New York City's Diamond District than it does to the dehydrated person dying of thirst in Death Valley.[164] That person would pay all the diamonds in the world for a glass of water. Of course, once they have had that first glass, the second and subsequent glasses become worthless—economists call this diminishing marginal utility.

Price and production share a bidirectional causal relationship, each influencing the other according to basic economic principles. In a market of perfect competition, the price of a good or service is found at the intersection of its supply and demand.[165] The law of supply holds that as prices rise, producers will produce more of a good.[166] Conversely, the law of demand states the opposite for consumers

[161] *Id.* ("Nothing is more useful than water; but will purchase scarce any thing; . . . [a] diamond, on the contrary, has scarce any value in use; but a very great quantity of other goods may be had in exchange for it.").

[162] Additionally, the theory of marginal utility also teaches us that diamonds are only more expensive when one isn't dying of thirst in a desert. Consumer value preferences are defined, in part, due to consumer's subjective preferences toward the scarcity of competing options in a competitive market.

[163] *See generally* Posner, *supra* note 130.

[164] *See* Smith, *supra* note 145; *see also* Carl Menger, Principles of Economics 140 (1976) ("Diamonds and gold are so rare that all the diamonds available to mankind could be kept in a chest and all the gold in a single large room, as a simple calculation will show. Drinking water, on the other hand, is found in such large quantities on the earth that a reservoir can hardly be imagined large enough to hold it all.").

[165] Boundless, Economics § 10.1 (2014) https://socialsci.libretexts.org/Bookshelves/Economics/Economics_(Boundless)/10%3A_Competitive_Markets/10.1%3A_Perfect_Competition [https://perma.cc/NNW4-NERN].

[166] The Investopedia Team, *The Law of Supply Explained, With the Curve, Types, and Examples*, Investopedia (Sept. 30, 2023), https://www.investopedia.com/terms/l/lawofsupply.asp#:~:text=The%20law%20of%20supply%20says,disincentivized%20from%20producing%20as%20much [https://perma.cc/Z7VK-PSYJ].

with rising prices of a good or service translating into less consumers.[167] Producers find that the invisible hand of the market constrains them.[168] But for the consumer and their willingness to come to market, producers would produce into the infinite.[169] Yet, the law of marginal utility further constrains them.[170] Because intrinsic utility does not define value, a consumer's subjective marginal preference toward a unit of a thing means that producers will never be able to sell as much product as they would like.[171]

Perfect competition requires complete, symmetrical information between transacting parties—a rare scenario. Real-world markets are dynamic, with firms deciding optimal output levels. A perfectly competitive firm has but one decision: what output of a good to produce. Both parties to the transaction benefit from exchange in this market, but the consumer is robbed of the creative destructive forces of the market.[172] Economists define the benefit to the consumer as the consumer surplus; the benefit to the producer as the producer surplus.[173] These together create the total economic benefit to the public realized through free trade and competition. Highly competitive marketplaces are characterized by high amounts of consumer surplus, while oligopolistic and monopolistic markets have low amounts of consumer surplus.[174]

When a marketplace is in an oligopolistic or monopolistic state, the producer in that marketplace reaps additional producer surplus at the expense

---

[167] *See* U. Minn., *supra* note 146.

[168] *See* Smith, *supra* note 145, at 349.

[169] *Id.* at 259.

[170] *Section 01: Consumer Behavior*, BYU – Idaho, https://courses.byui.edu/econ_150/econ_150_old_site/lesson_05.htm [https://perma.cc/C4PW-TLTK].

[171] *See* Menger, *supra* note 164, at 7–8.

[172] Joseph A. Schumpeter, Capitalism, Socialism, & Democracy 83 (1943).

[173] *See* Chris B. Murphy, *Consumer Surplus Definition, Measurement, and Example*, Investopedia (Mar. 19, 2023), https://www.investopedia.com/terms/c/consumer_surplus.asp#:~:text=A%20consumer%20surplus%20happens%20when,they%20were%20willing%20to%20pay [https://perma.cc/B47V-S2ME] (describing consumer surplus as the occurrence when the price that consumers pay for a product or service is less than the price they're willing to pay); *see also* The Investopedia Team, *Producer Surplus: Definition, Formula, and Example*, Investopedia (Aug. 1, 2022), https://www.investopedia.com/terms/p/producer_surplus.asp [https://perma.cc/QZ3P-GMCY] (defining producer surplus as the difference between how much a person would be willing to accept for a given quantity of a good versus how much they can receive by selling the good at market price).

[174] Goodwin et. al., Microeconomics in Context (3d ed. 2013), https://www.bu.edu/eci/files/2019/06/MIC_3e_SSG_Ch17.pdf. [https://perma.cc/FZ6E-M294].

of consumers.[175] Copyright's lawful monopoly creates deadweight loss, granting producers temporary monopolies over works to remedy disincentives to create freely-copyable expressions. Copyright policy limitations aim to balance this loss against market failures from lack of incentives. Historically, high production and distribution costs, barriers to entry, and government regulations reinforced copyright's artificial scarcity.

Economies of scale, and the physical nature of books and other works have historically reinforced copyright's artificial scarcity.[176] For centuries, the high costs of production and distribution needed to scale production accordingly, served as a barrier to entry that helped limit piracy. Governmental regulation, licensure, censorship, and copyright further legitimized the status quo. Yet the Founders saw "monopoly as a two-edged sword"; a necessary evil to increase the public good.[177] Because while copyright encourages production of new works, it restricts the dissemination of works once produced.[178] The absence of competition translates into higher consumer prices and transaction costs.[179] It can be difficult for potential users of copyrighted works to locate owners and strike a bargain.[180] And monopolists invariably reap more consumer surplus than necessary.

Copyright's artificial scarcity is said to drive two separate but complementary incentives: the production of new forms of creative original expression and the cultivation of a marketplace for material objects containing those expressions.[181] To the extent this shaping of information market structures reduces the direct and search cost of information dissemination, the copyright regime reinforces the patent system, furthering the goals of the Progress Clause.[182] However, much of the economic literature in copyrights makes a fatal error: copyright

---

[175] *Id.*

[176] *But see* Jake Linford, *Copyright and Attention Scarcity*, 42 Cardozo L. Rev. 143, 144 (2020) ("[P]reserving copyright protections – especially the derivative right – may have unexpected benefits for consumers, including keeping attention costs in check").

[177] Golan v. Holder, 565 U.S. 302, 346 (2012).

[178] *Id.*

[179] *Id.*

[180] *Id.*

[181] *Id.*

[182] Feist, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340, 354 (1991) (citing Harper & Row, 471 U.S. 539, 563; *accord* Robert A. Gorman, *Fact or Fancy: The Implications for Copyright*, 29 J. Copyright Soc'y 560, 563 (1982)) ("Throughout history, copyright law has recognize[d] a greater need to disseminate factual works than works of fiction or fantasy.").

does not incentivize production of *one* homogeneous product.[183] Each of the Section 106 rights individually and together result in several differing product offerings, sometimes in direct competition with an author's other existing rights, and sometimes in completely different marketplaces or channels of distribution.[184] Copyright does not directly reward creativity or encourage creativity, nor does it reward authors for their labors of creativity.[185]

While copyright's stated goal is incentivization, the outcome is the commodification of art.[186] The American copyright system developed to solve a specific market failure—the lack of incentives to invest in the expensive capital and labor structures needed to disseminate and distribute information throughout the country. Ultimately, "[t]he possibility of eliciting new production is, and always has been, an essential precondition for American copyright protection."[187] Copyright exists to create a specific monopolistic or oligopolistic market structure with specific congressionally defined boundaries. It seeks to create a market of a few firms engaged in the mass production of works.[188]

As technology reduces entrenched firm's marginal costs, Congress has repeatedly rebalanced copyright's incentives.[189] Amendments to the copyright term, scope, licensing, renewals, termination and works for hire doctrine have adjusted the scale toward additional producer surpluses.[190] Substantive doctrines like fair use, the idea-expression dichotomy, merger, and others—in theory but

[183] *See generally* Towse et al., *supra* note 143.

[184] *Id.*

[185] *Id.* at 2, 6–7; *Feist*, 499 U.S. at 349.

[186] I use commodification as an economic term, not in a pejorative sense. Commodification is an industrial arrangement of the factors of production to mass produce fungible commodities for sale in the marketplace. *See* Walter Benjamin, *The Work of Art in the Age of Mechanical Reproduction, in* Illuminations 1, 24 (Hannah Arendt ed., Harry Zohn trans., 1969) (1935) (quoting Aldous Huxley, Beyond the Mexique Bay: A Traveller's Journal 274 (1934)), https://web.mit.edu/allanmc/www/benjamin.pdf [https://perma.cc/8KPF-NLFT] ("Universal education and relatively high wages have created an enormous public who know how to read and can afford to buy reading and pictorial matter. A great industry has been called into existence in order to supply these commodities.").

[187] Golan v. Holder, 565 U.S. 302, 345 (2012).

[188] While beyond the scope of the paper, it is worth noting that this arrangement is mutually beneficial for the Sovereign granting the copyright privilege. If Congress defines the market, Congress picks the winners of the marketplace. And Congress can jawbone the types of information it wants disseminated to the public as a result. In this way, copyright advances both competition and political information marketplace policies.

[189] *See* Eldred v. Ashcroft, 537 U.S. 186, 188 (2003).

[190] *See id.* at 248–49 (Breyer, J., dissenting).

perhaps not in practice—have all been held to further unify the Copyright Act and the First Amendment's dual mandate of advancing American culture and freedom.[191] These disparate rules each attempt to limit producer overreach and prevent producers from capturing too much of the consumer surplus while also ensuring that the consumer surplus is generated in the first place.[192]

Technological obsolescence of historical market barriers routinely threatens this equilibrium. For example, in the late 1960s, Congress became increasingly concerned that reproduction technologies were eliminating the cost disincentives to pirate copyrighted works.[193] Concerned that the internet and digital copying technology were driving these costs down (and purportedly to harmonize American and international copyright law), Congress enacted a number of modern reforms to copyright law, under the belief that producers would stop making new works if any consumer could easily and cheaply make a copy of a work.[194] The Judiciary Committee report that accompanies the 1976 amendments to the Copyright Act explains:

> The history of copyright law has been one of gradual expansion in the types of works accorded protection. . . . [S]cientific discoveries and technological developments have made possible new forms of creative expression that never existed before. In some of these cases the new expressive forms—electronic music, filmstrips, and computer programs, for example—could be regarded as an extension of copyrightable subject matter Congress had already intended to protect, and were thus considered copyrightable from the outset without the need of new legislation.[195]

The conversations surrounding generative AI do not occur in a vacuum. Many of these issues are not novel from a policy perspective. Painters thought photography was the end of the fine arts. Video killed the radio star. File-sharing

---

[191] *See id.* at 219–20.

[192] *See generally* Murphy, *supra* note 173; *Eldred* at 130 (Breyer, J., dissenting) ("[T]he statute's legislative history suggests another possible justification. That history refers frequently to the financial assistance the statute will bring the entertainment industry, particularly through the promotion of exports.").

[193] Zachary L. Catanzaro, *NFT-tethered Sound Recordings and Digital Resale*, 14 Harv. J. Sports & Ent. L. 17, 37 (2023).

[194] *See id.* at 17; *see also* Patry, *supra* note 69.

[195] H.R. Rep. No. 94-1476, at 51 (1976); S. Rep. No. 94-473, at 50 (1975).

was to be the death of the music industry. Congress has amended the Copyright Act on several occasions in response to these and other advancements in technology and the invention of new mediums of expression.[196] Digital art itself has existed since the 1960s, and the threat of the unauthorized distribution of copyrighted works has dominated most of the public policy debates since.[197] A study of the historical development of the American copyright system and the changing perspectives toward the Incentive Theory show that the Theory is really a post-hoc rationale for copyright. As I discuss in the next section, copyright was, is, and continues to be, a means for advancing specific industrial policies in a manner that is perceived to advance the sciences and useful arts.

III
Beyond Incentives: Copyright as Competition Policy

A. Mechanical Reproduction in Europe

Expression predates copyright, and copyright was unknown before the printing press.[198] According to modern theory, copyright should not serve competition-related goals under the Progress Clause, but the Copyright Incentive Theory in application has always served as a *post hoc* rationale for copyright.[199] The historical development of the American copyright system shows why. Every major technological leap has, in some way, raised the same fundamental structural questions that the development of generative AI tools have. Historically, copyright is a competition policy tool first and foremost, one used by Congress to orient the marketplace toward specific economic goals. The idea of incentivizing authors to create works, while germane, is a wholly modern conceptualization of copyright.

---

[196] *See* National Commission on New Technological Uses of Copyrighted Works, Final Report 3 (1978) [hereinafter CONTU Report].

[197] *See id.* ("By 1967, when Congress was considering to revise the 1909 Act, it was apparent that the copyright problems raised by computer uses had not be dealt with directly in the [amendment bills].").

[198] *See* 1 Melville B. Nimmer & David Nimmer, Nimmer on Copyright § 2A.02 (2023) (citing Bernard Lang, *Orphan Works and the Google Book Search Settlement: An International Perspective*, 55 N.Y.L. Sch. L. Rev. 111, 154 (2011)); *see also* Elizabeth Armstrong, Before Copyright: The French Book Privilege System 1498-1526 2 (1990) ("[A]t an early stage it was realized also that a particular book might qualify for a privilege, at the request of an author, publisher or printer.").

[199] *See* CONTU Report, *supra* note 196 (arguing that the need to modernize copyright was driven by national and international information control policy; protecting copyright holders; and promoting public access to protected works).

The starting place of our inquiry is found in the information market structures that existed around the advent of mechanical printing. The manual reproduction of books was economically labor and capital intensive before mechanical forms of reproduction.[200] Following the European Monastic tradition, monks crafted a book's raw materials, including the parchment, ink, binding materials, and linen.[201] They painstakingly hand-copied each work, a laborious and time-consuming activity.[202] This expensive process and economically inefficient exploitation of the factors of production made supply scarce, restricting the dissemination of knowledge throughout Europe.[203] In this period, due to high production costs, books were expensive luxury goods, reserved in their limited supply to the religious and political castes.[204]

This changed with the advent of mechanical printing. The mechanical reproduction of books came to Europe in 1450, when Gutenberg founded his printing press.[205] Printing, along with other socio-economic and political pressures, led to a gradual collapse of Europe's then existing monopolistic information market structures.[206] After 1436, the price of a book fell from a week's wages to less than a day's, with the average cost falling at 2.4% per annum for nearly a hundred years in the period following.[207] By the first decade of the 16th century,

[200] See Fran Rees, Johannes Gutenberg: Inventor of the Printing Press 25–26 (2006) ("Books were so valuable and costly that they were chained to tables or high shelves so they could not be removed from the room."); *see also* Ernest A. Savage, Old English Libraries: The Making, Collection, and Use of Books During the Middle Ages 81 (1999) ("You know not what it is to write, it is excessive drudgery."), https://www.gutenberg.org/cache/epub/1615/pg1615-images.html [https://perma.cc/L5EW-6NTP].

[201] Zack Kertcher & Ainat N. Margalit, *Challenges to Authority, Burdens of Legitimization: The Printing Press and the Internet*, 8 Yale J.L. & Tech. 1, 16 (2005).

[202] *Id.*

[203] *Id.*

[204] *Id.*

[205] Johann Gutenberg invented the first printing press in 1450 in the city of Mainz, Germany, and printed his first book in 1454. *See* Miriam Eliav-Fledon, The Printing Revolution 29 (2000); *see also* Robert Hoe, A Short History of the Printing Press 5 (1902).

[206] *See generally* Elizabeth L. Eisenstein, The Printing Revolution in Early Modern Europe 164–208 (2d ed., 2005); *see also* Kertcher & Margalit, *supra* note 201, at 17.

[207] *See generally* Jeremiah Dittmar & Skipper Seabold, *New Media and Competition: Printing and Europe's Transformation after Gutenberg* (Ctr. for Econ. Performance, Discussion Paper No. 1600, 2019), https://cep.lse.ac.uk/pubs/download/dp1600.pdf [https://perma.cc/5VBT-FAEB].

it is estimated that some 2 million books were printed in Europe.[208] Production grew exponentially, and the continent saw 20 million printings by 1550, and 150 million printings by 1590.[209]

Advances in production techniques also reduced the overall size and weight of books, making them easier to transport and distribute throughout Europe.[210] Falling distribution costs, coupled with larger supplies of works drove literacy rates up, which increased demand for further printings.[211] As supply increased, price fell, and literacy rates rose correspondingly in a cyclical feed-back loop.[212]

The impact of this new technology was an economy of European information marketplaces. The old hand reproduction method of creating reproductions of books created a highly elastic demand curve. Books were a luxury good, reserved for the aristocracy and religious castes of Europe. This began to change with the advent of book printing. As the technology pushed reproduction and distribution costs down, the demand for works trended toward an elastic demand curve. But the benefits of the technology were not perceived as unlimited, and regulation and monopoly soon followed.

Though initially characterized by free market competition, the book publishing industry gradually developed oligopolistic structuring due to inefficient transportation networks and prohibitive barriers to entry.[213] Paper-based books were heavy and cumbersome in bulk, constraining dissemination outside local distribution channels.[214] Copies spread via transportation links as far-flung printers produced their own print runs of works. High fixed costs and long recoupment horizons compounded barriers to entry.[215]

---

[208] Mark Cartright, *The Printing Revolution in Renaissance Europe*, World Hist. Encyclopedia (Nov. 2, 2020), https://www.worldhistory.org/article/1632/the-printing-revolution-in-renaissance-europe/ [https://perma.cc/N83N-355L].

[209] *Id.*

[210] *See id.*

[211] *See id.*

[212] *See* Kertcher & Margalit, *supra* note 201.

[213] *See* Dittmar & Seabold, *supra* note 207, at 22 ("[C]ompetition within cities was salient, and that local industrial organization influenced competitive conduct in printing, because inter-city transport costs were high. Printers developed arrangements to limit competition.").

[214] *See* Cartright, *supra* note 208.

[215] *See* Dittmar & Seabold, *supra* note 207, at 144 ("Because high transport costs limited trade, historians observe that local production provides a measure of local exposure to content").

Consequently, market division agreements and governmental privileges led to increased cartelization.[216] Incumbent printers artificially restricted production runs to maximize monopolistic profits. Technological and infrastructure limitations enabled rent-seeking behaviors that transformed book publishing into a concentrated, anti-competitive industry.[217] Political and religious censorship soon followed.[218] Between 1469 and 1517, the Venetian Republic granted a series of increasingly draconian monopoly privileges over printing.[219] Similar legislation followed in France in 1475 and Germany in 1531.[220] In 1476, Caxton founded his printing press at Westminster.[221] One-hundred fifty years of English censorship followed.[222]

The first English copyright privilege was granted to the King's Printer, Richard Pynson, in 1518, with a series of royal privileges following.[223] In the aftermath of the War of the Roses, Henry VIII issued a series of Proclamations consolidating the political and religious power of England within the Crown.[224] The first list of prohibited books appeared in 1529, followed by the grant of licenses the year after.[225] Henry VIII granted the Stationer's Company a royal charter,

---

[216] *Id.* at 6–7.

[217] David Finkelstein, The Book History Reader 324–43 (2002) ("Although there might be a brisk demand for books of a certain kind, the number available was limited to those that the privileged bookseller desired or was able to produce in his own shop. There could be no competition and no healthy multiplication of such books.").

[218] *See* Kertcher & Margalit, *supra* note 201, at 17–21.

[219] George Havent Putnam, Books and Their Makers during the Middle Age: A Study of the Conditions of the Production and Distribution of Literature from the Fall of the Roman Empire to the Close of the Seventeenth Century 334–35 (1896).

[220] *Id.* at 412, 439.

[221] *Famous Early English Printers: William Caxton*, Libr. of Cong., https://guides.loc.gov/english-print/famous-printers [https://perma.cc/68X2-WFCQ].

[222] William F. Patry, Copyright Law and Practice 5–11 (2000); *see* Geoffrey Alan Cranfield, The Press and Society: From Caxton to Northcliffe 1–3 (1978).

[223] *See* Patry, *supra* note 222, at 5.

[224] *See, e.g.*, Henry VIII, *Proclamation Prohibiting Heretical Books; Requiring Printer to Identify Himself, Author of Book, and Date of Publication* (July 8, 1546), reprinted in 1 Tudor Royal Proclamations 30–31(Paul L. Hughes & James F. Larkin eds., 1964) (banning the importation of heretical religious works); *see also* Ronan Deazly, *Commentary on Henrician Proclamation* (1538), Primary Sources on Copyright (1450–1900). https://www.copyrighthistory.org/cam/commentary/uk_1538/uk_1538_com_972007121733 [https://perma.cc/MSX6-H733] (noting and providing background for the Henrician Proclamation of 1539 suppressing the spread of Lutheran doctrine).

[225] Cranfield, *supra* note 222, at 1.

giving them a monopoly over the printing of books from 1557 until 1710, in an effort to further suppress foreign competition and the importation of foreign manufactured books.[226]

The Stationer's Company was empowered to inspect printing operations and seize and destroy offending equipment and publications, in service of the Crown's prerogative (or its own monopoly).[227] It further constrained book production to extract additional monopoly rents.[228]

When the Star Chamber was abolished in 1641, the cap on London printing houses was removed, and by 1660, there were nearly 60 operating within the city.[229] However, the Stationer's Company's complex licensing systems and territorial arrangements caused prices to rise steadily by as much as 40% in 1635, making books unaffordable for most day laborers.[230]

After several centuries of abuse, Parliament enacted the Statute of Anne, the first modern copyright statute, in 1709 as a means of reforming perceived market failure and redressing public outcry over the Company's monopoly abuses.[231] In 1735, the booksellers proposed an amendment that would have extended their copyright monopoly to 1756.[232] The amendment was defeated on the grounds that it would create a perpetual monopoly.[233] Prices began to decline, such that by the late 18th century, the fledgling American printing industry could not compete on price.[234] So it was the political desire to restrain printing, not a need to incentivize

---

[226] Patry, *supra* note 222.

[227] *Id.*

[228] *See* Finkelstein, *supra* note 217, at 342 ("The effect of this monopoly had upon prices is illustrated by the fact that the London booksellers sold *Aesop's Fables* at 4*d* a sheet and Ovid's *Epistels* at 8*d*, [while the Cambridge University Press] cost respectively 3*d* and 5*d* a sheet."). Cambridge would later obtain an injunction against the Stationer's Guild for refusing to publish the Cambridge edition of Lily's *Grammer*.

[229] *Id.* at 342.

[230] *Id.* at 343.

[231] Patry, *supra* note 222; Tyler T. Ochoa, *Anti-Monopoly Origins of the Patent and Copyright Clause*, 49 J. Copyright Soc'y 909, 909 (2002).

[232] Eldred v. Ashcroft, 537 U.S. 186, 232–33 (2003).

[233] *Id.*

[234] 1 A History of the Book in America: The Colonial Book in the Atlantic World 174 (Hugh Amory & David Hall eds., 2000) ("Americans encouraged domestic manufactures as an obvious corollary of nonimportation."); Alexander Hamilton, Report on the Subject of Manufactures (1791) ("The great number of presses disseminated throughout the Union, seem to afford an assurance, that there is no need of being indebted to foreign Countries for the printing of the Books, which are used in the United States. A

art, that characterized the early formation of copyright protection at common law. But as printing came to colonial America, a different concern came to predominate copyright theory.

B. Mechanical Reproduction in the Colonies

The first printing press came to colonial Massachusetts in 1638, when Reverend Jose Glover was expelled from the Church of England as a heretic.[235] Glover afterward contracted with a craftsman, Steven Daye, to bring his press to support the newly founded Harvard University.[236] Reverend Glover died on the Atlantic crossing, but with his widow Elizabeth's help, his machine eventually passed into the hands of Harvard, becoming the first printing press operated in colonial America.[237]

Lawful monopolization followed. The reforms of the Statute of Anne were not extended to the colonies, leaving the colonial government free to restrain the book trade on political and religious grounds.[238] Shortly after printing presses were erected in New York and Philadelphia, the General Court of the Bay Colony (the colonial government authority) permitted no other presses to operate for a period of nearly 40 years.[239] Any hope of a nascent book industry was quashed, with no major investments or changes to the American book trade for the following century.

As a result, the colonial production and distribution of printed works was difficult and proved prohibitively expensive.[240] Insufficient transportation infrastructure and an agrarian-mercantilist economy limited the sale of printed works to major coastal cities.[241] The combination of the General Court's monopoly privileges and high production and labor costs resulted in most domestically consumed books being imported from England and Europe through transatlantic

---

duty of ten per Cent instead of five, which is now charged upon the Article, would have a tendency to aid the business internally.").

[235] *See, e.g.*, John A. Harrer, *Reverend Jose Glover and the Beginnings of the Cambridge Press*, 38 PROCS. CAMBRIDGE HIST. SOC. 87, 89–91 (1960).

[236] *E.g.*, *id.* at 92–93.

[237] *See, e.g.*, *id.*

[238] *See* PATRY, *supra* note 222, at 14–15 ("[N]o printing was permitted in Virginia until 1730. . . . Other colonies besides Virginia were also restrictive.").

[239] Harrer, *supra* note 235, at 88–89.

[240] *See, e.g.*, James Gilreath, *American Book Distribution*, 95 PROCS. AM. ANTIQUARIAN SOC'Y 501, 535 (1985).

[241] *See* CATHY N. DAVIDSON, REVOLUTION AND THE WORD: THE RISE OF THE NOVEL IN AMERICA 80 (2004).

trade.[242] The Stamp Act of 1765 and Revenue Act of 1767 further increased the cost of parchment and vellum, which both created a barrier to entry in the publication business and brought increased pressures on the domestic manufacturing capacity of books.[243] The Acts also restrained internal domestic commerce amongst the colonists.[244] These high labor and capital costs factors directly influenced what works were printed and how they were disseminated to the public.[245]

In lieu of a free marketplace for literature, a nascent sharing economy for literature and ideas emerged.[246] While bookstores existed, most relied on the sale of other goods for income.[247] Early novels were expensive, and rural readership primarily relied on subscription and direct salesman to bring works to them.[248] This encouraged the development of robust public and private library systems to distribute works.[249] Small towns often established at least one library collection, making books accessible and affordable to an emergent class of readers.[250] Demand for works outpaced supply, such that an alternative economic system was necessary to satisfy consumer demand.

The colonial distribution system for books that emerged was chiefly decentralized. It consisted of informal networks of friends, laborers, agents, peddlers, bookstore owners whose income came only partially from books, and a few institutions and private individuals who imported European books.[251] The most rapid tool for reproduction in this period was localized reprints. Thomas Paine's 1776 pamphlet *Common Sense*, for example, was in such high demand that bookstore owners could not keep it in stock.[252] Many local printers turned to producing their own unauthorized copies as the pamphlet circulated through

[242] *See* Gilreath, *supra* note 240, at 507, 514–15 (discussing the importance and prevalence of imported English books in the colonial book market).
[243] *See id.*
[244] *See id.*
[245] *See* Gilreath, *supra* note 240, at 526 (discussing this dynamic's effects on the printing of *Common Sense*).
[246] *See id.* at 525.
[247] *Id.* at 516.
[248] *Id.* at 528.
[249] *See id.* at 525–26.
[250] Davidson, *supra* note 241, at 88.
[251] Gilreath, *supra* note 240, at 526.
[252] *Id.*

the colonies.[253] And while logic would presume that the Revolution should have severed the English-American transatlantic book trade and quashed the book industry in this period, some historical research suggests the possibility of an *increase* in the exchange of political literature during open hostilities. [254]

After the war, disparities in specialization of labor between England and the United States meant that English producers easily outcompeted efforts at large-scale domestic printing operations.[255] Books printed in England were cheaper to purchase in the fledgling United States than domestic works. Lord Sheffield noted that "all school and common books can be sent cheaper from Britain than they can be printed in America, or sent from Ireland."[256] The 1796 *Present State of Printing and Bookselling in America* noted "[t]he people of North America manufacture their own paper, and in sufficient quantities for home consumption, but the price of labour is still so extremely high, that it seldom answers to print any work there: at least, they have hitherto seldom ventured beyond their own laws, temporary pamphlets, and newspapers, which every State now prints in abundance."[257] Priced out of competition, the nascent domestic American book trade floundered.

In the years preceding the Constitutional Convention, a coalition of domestic publishers, led by lexicographer Noah Webster, for somewhat self-serving reasons, began lobbying state legislatures for copyright laws allegedly to bolster domestic production. All but one state enacted reform prior to the Constitutional Convention, with most modeled after the Statute of Anne. In 1783, the Constitutional Convention concluded "that nothing is more properly a man's own than the fruit of his study, and that the protection and security of literary property would greatly tend [sic] to encourage genius."[258]

But the question of copyright protection was not a major priority at the Convention, and no committee meeting notes survive its debate.[259] At least some delegates, including Thomas Jefferson, opposed the idea as furthering monopolies

[253] *Id.*
[254] *Id.* at 529–30.
[255] *See id.* at 530.
[256] *Id.*
[257] *Id.*
[258] PATRY, *supra* note 222, at 19.
[259] *Id.* at 23.

and the aristocracy.[260] Yet, in Federalist Paper No. 43, James Madison made his case for a federal copyright scheme, arguing that the public interest in encouraging the spread of knowledge was in harmony with the private property rights of authors.[261]

The Constitution's Progress Clause was approved with no recorded debate.[262] It grants Congress the power to "promote the Progress of Science . . . by securing for limited Times to Authors . . . the exclusive Right to their respective Writings."[263] But in the period between the Constitution's ratification in 1783 and 1790, it was unclear how authors acquired a copyright under the Progress Clause. In this period, Congress was petitioned by several authors who believed that Congress had to directly grant a copyright monopoly, as was the prerogative of the English monarchs.

Recognizing these issues, George Washington's State of the Union Address of 1790 called for a federal copyright scheme as a means of advancing education and for improvements in transportation infrastructure to assist in the distribution of knowledge and information throughout the United States.[264] Many of the Founding Fathers saw the spread of information and knowledge as an important democratic bulwark against tyranny.[265] The United States at this time was predominantly an agrarian economy, so the problem of the day was solving the difficulty in distribution of educational works throughout the United States. The roads, transportation system, labor conditions, and slow communications of the late 18th century created an identified form of market failure, one left unresolved as book publishers were either economically unwilling or unable to sufficiently scale production factors pre-industrialization and compete with the English printers.

The Copyright Act of 1790 attempted to address this perceived market failure, with a grant protecting "maps, charts, books . . . and manuscripts"—the tools of

---

[260] *Id.*

[261] The Federalist No. 43 (James Madison).

[262] U.S. Const. art. I, § 8, cl. 8.

[263] *Id.*

[264] President George Washington, First Annual Address to Congress (Jan. 8, 1790) ("[T]here is nothing, which can better deserve your patronage, than the promotion of Science and Literature. Knowledge is in every Country the surest basis of public happiness.").

[265] Patry, *supra* note 222, at 28.

education and science.[266] The 1790 Act did not define the term "book," leading to anything not fitting within the scope being classified as a book in applications.[267] This predictably led to non-educational literary works being registered, including hotel registers, form books, circulars, syndicate articles, and compilations of information.[268] Further, the resulting confusion and overly punitive formalities found in the 1790 Act led to most authors seeking protection under state rather than federal law.[269] The 1790 Act was seen as a failure in this regard.

Washington and Alexander Hamilton saw reliance on English production as a threat to the economic development and recently won independence of the United States. Without the appropriate economic incentives for domestic manufacture, they were greatly concerned with English and European producers pricing fledgling American industrial production out of the domestic and global marketplace. The 1790 Act echoed the Federalists' platform of economic protectionism, with its scope of protection limited to domestically manufactured works produced by U.S. residents and citizens.[270] To further protect domestic manufacture of books, Congress increased book tariffs several times between 1794 and 1800, raising the tariff from 5% to 12.5%.[271]

The Copyright Act maintained this domestic protectionism in the 1831, 1909, and 1976 revisions.[272] Copyright's domestic protectionism would last until the United States acceded to the Berne Convention in 1983.[273] As part of its accession, in 1986, Congress repealed the domestic production requirements from Section 601 of the Copyright Act.[274] So, for the better part of the existence of federal copyright protection, the driving concern was protecting *domestic* reproductions of

[266] Copyright Act of 1790 §§ 1, 6 (repealed 1831).
[267] *Id.*
[268] Patry, *supra* note 222, at 30 n.91.
[269] *Id.* at 33–34.
[270] Copyright Act of 1790 § 1 (repealed 1831).
[271] Gilreath, *supra* note 240, at 531.
[272] *See generally id.*
[273] Berne Convention for the Protection of Literary and Artistic Works, Paris Revision, *done on* July 24, 1971, S. Treat Doc. No. 99-27, 828 U.N.T.S. 221.
[274] Eldred v. Ashcroft, 537 U.S. 186, 262 (2003) (Breyer, J., dissenting) (quoting S. Rep. No. 104–315, at 3 (1996)) ("The purpose of the bill is to ensure adequate copyright protection for American works in foreign nations and the continued economic benefits of a healthy surplus balance of trade."); 144 Cong. Rec. H9951 (statement of Rep. Foley) (noting "the importance of this issue to America's creative community," "[w]hether it is Sony, BMI, Disney," or other companies).

works, not incentivizing authors to create new art. Congress made the public policy determination that suffering some of the deadweight losses caused by monopolistic market structure was the best means by which to foster and develop the domestic manufacturing of works.

C. Industrialization

The early 19th century brought new challenges to American information market structures. Prior to American Industrialization, a trip from New York to Chicago in this period could take 6 weeks' time. Books remained expensive, and the fledgling United States was in significant debt to France for financing its Revolution. Many school teachers had come to rely on libraries and sharing systems to access literature and other education aids. Without sufficient capital reserves or the tax structure to finance education, the federal government saw the copyright monopoly as a means of spurring private investment into the information marketplace.[275] Copyright was seen as a solution to this problem.

During the Antebellum period, two technological developments began pushing down the costs of mechanical reproduction and distribution of works. First, the rapid industrialization of the United States introduced commercial mass (re)production. Second, the railroad and the telegraph drastically reduced the cost of information sharing and the distribution of goods. The advent of the telegraph in the 1830s meant that information could be disseminated between states at rapid speed. The building of rail lines caused the journey time between New York and Chicago to fall from 3 weeks in 1830 to 2 days by 1860.[276] By 1850, nearly 9,000 miles of railway had been laid.[277] Faster information dissemination and distribution of raw materials and consumer goods fed further innovation and market demand, causing the United States to undergo a period of significant increases in productive

[275] *See* Copyright Act of 1780 (emphasis added) ("An Act for the Encouragement of *Learning*, by securing the copies of maps, charts, and books, to the authors and proprietors of such copies, during the times therein mentioned.") (repealed 1831); *see also* Washington, *supra* note 264 ("Nor am I less persuaded that you will agree with me in opinion that there is nothing which can better deserve your patronage than the promotion of science and literature. Knowledge is in every country the surest basis of public happiness. In one in which the measures of government receive their impressions so immediately from the sense of the community as in ours it is proportionably essential.").

[276] Dan Allosso, *Transportation, Land, Industry*, Minn. Libs. Publ'g Project, https://mlpp.pressbooks.pub/ushistory1/chapter/transportation-and-industry/ [https://perma.cc/4NZK-D73T].

[277] *Id.*

capacities and economic growth in the pre-war period.[278] And most importantly, several new technologies born of the late industrial period challenged existing copyright norms.

Several copyright reforms followed in the period of industrialization, including the protection of music compositions as a category separate from books and simplification of the deposit requirements. Starting with the Copyright Act of 1831, deposit copies were required in the district court that had jurisdiction over the author's residence, further facilitating the dissemination of knowledge capital on a decentralized basis.[279] This had the immediate effect of lowering the public's search costs in locating information which in turn further cut distribution costs. By tying the deposit to the grant, Congress had created an incentive for authors of works to make them available to the public at known locations. Later, in 1846, the Smithsonian and the Library of Congress were added as depositees.[280] It would then later shift, temporarily, to the Patent Office.[281]

The Supreme Court's first copyright decision came in the 1834 case *Wheaton v. Peters*, wherein the Court confronted the reproduction of its own decisions.[282] Concerns of a "proper" market structure permeate the case. *Wheaton* involved a claim of copyright infringement of the Court reporter's compilations of decisions and accompanying annotations.[283] The third reporter, Wheaton, had supplemented his income with these reporters.[284] The Wheaton reporters were notoriously expensive, pricing most lawyers (and the public) out of accessing them.[285] His successor, Peters, took the cases in the Wheaton reporters and republished them in an abridged volume.[286] Wheaton sued.[287] In ruling against Wheaton, and out of concern for public harm caused by the monopolization of information, the Court

---

[278] *Id.*

[279] John Y. Cole, *Of Copyright, Men, & a National Library*, Libr. of Cong., https://www.loc.gov/collections/early-copyright-materials-of-the-united-states/articles-and-essays/copyright-history/ [https://perma.cc/88B3-74ES].

[280] *Id.*

[281] *Id.*

[282] *See* Wheaton v. Peters, 33 U.S. 591, 667–68 (1834).

[283] *See id.* at 592.

[284] *See id.*

[285] *See id.*

[286] *See id.*

[287] *See id.*

remarked that it "is unanimously of opinion that no reporter has or can have any copyright in the written opinions delivered by this Court, and that the judges thereof cannot confer on any reporter any such right."[288]

Photography brought similar market structure concerns. Invented as early as 1816 and popularized around the late 1830s, the technology both spurred consumer demand and military applications during the Civil War.[289] During the Civil War, Union and Confederate demand for family portraits and battle scenes resulted in a consumer photography boom.[290] Military leaders recognized the strategic implications of the technology on information warfare, with both sides employing photographers to record enemy emplacements, roads, bridges, and railroads. Photography underwent rapid technological innovation in this period, resulting in lowered production costs for cameras and photographs. The invention of the tintype, which was a metal image, and the ambrotype, printed on glass, allowed for mass production of small photographs for consumers.[291] The massive popularity of photographs during the war, and to some extent, the works of war-photographer Mathew Brady, led Congress to add protection for photographic works to the Copyright Act in 1865.[292] The camera democratized art.[293] The ease of labor in capturing reality meant that anyone with the right equipment could do so. But the question of whether a copyright privilege in a photograph served the underlying goals of the Progress Clause would go unanswered for several decades.

The Copyright Act of 1870 was an attempt to modernize the Act in response to these changes in the domestic marketplace. First, it brought needed reform to

---

[288] *See id.* at 668.

[289] See Nadja Hansen, *Featured Publication: Photography and the American Civil War*, Metro. Museum of Art (Apr. 30, 2013), https://www.metmuseum.org/blogs/now-at-the-met/features/2013/photography-and-the-american-civil-war#:~:text=People%20were%20dying%20so%20quickly, democratic%20change%2C%22%20says%20Rosenheim [https://perma.cc/6FLS-KDSM].

[290] *Id.*

[291] See Eric Niiler, *How Civil War Photography Changed War*, NBC News (Apr. 11, 2011, 8:48 A.M.), https://www.nbcnews.com/id/wbna42531908# [https://perma.cc/6MFX-9URW].

[292] Wendi A. Maloney, *Lincoln Authorized 1865 Copyright Legislation*, Copyright Lore (Feb. 2009), https://www.copyright.gov/history/lore/pdfs/200902%20CLore_February2009.pdf [https://perma.cc/L75C-4UDA].

[293] Kathleen Connolly Butler, *Keeping the World Safe from Naked-Chicks-in-Art Refrigerator Magnets: The Plot to Control Art Images in the Public Domain through Copyrights in Photographic and Digital Reproductions*, 21 Hastings Commc'ns & Ent. L.J. 55, 59–60 (1998) (citing Trevor Fawcett, *Graphic Versus Photographic in the Nineteenth-Century Reproduction*, Art Hist., June 1986, at 185).

the deposit requirements, with the Library of Congress again serving as the sole depositee.[294] This served the dual purpose of streamlining the registration process and encouraging further development of a centralized storehouse of American culture.[295] The formalities were likewise made less punitive to encourage more authors to register and deposit works with the fledgling Copyright Office. This, coupled with another expansion in the protection of works to include paintings, drawings, chromolithographs, statues and statuaries, and models or designs, reflected the growing industrialization and new consumer marketplace within the United States. As industrial capital accumulated, massive social changes to American life occurred. As printing did several centuries before with literature, the industrial commodification of art and advent of new production technologies drove consumer demand which in turn fermented further technological innovation. The "democratization" of art had aligned the industrial capacity of the nation toward these new consumption preferences.

In 1884, the Supreme Court finally took up the question as to whether photography was copyrightable subject-matter in *Burrow-Giles v. Sarony*.[296] In 1882, photographer Sarony had captured a portrait of Oscar Wilde in his *magnum opus* photo *Oscar Wilde No. 18*.[297] Burrow-Giles Lithographic Company later made unauthorized reproduction lithographs of the work.[298] Sarony sued.[299] On appeal to the Supreme Court, the court rejected Burrow-Giles's arguments that a camera results only in a mere mechanical reproduction of nature.[300] Rather, the Court held that it was the expressive contributions of the human author to the depiction contained in the photograph that vested authorship in the work.[301] The Court recognized, for the first time, that the addition of human originality, in choosing and arranging the composition, lighting, subject-matter, and technical

[294] Cole, *supra* note 279 (quoting Charles Coffin Jewett, Annual Report of the Board of Regents of the Smithsonian Institution (1849)) ("To the public, the importance of having a central depot, where all products of the American mind may be gathered, year by year, and preserved for reference, is very great. The interest with which those in 1950 may consult this Library can only be fully and rightly estimated by the historian and the Bibliographer.").

[295] Cole, *supra* note 279.

[296] *See generally* Burrow-Giles Lithographic Co. v. Sarony, 111 U.S. 53 (1884).

[297] *Id.* at 54

[298] *Id.*

[299] *Id.*

[300] *Id.* at 59-60

[301] *Id.*

skills in capturing an image, to the capturing of raw data about the world, was sufficient under the Copyright Act.[302]

The seminal 1908 Supreme Court *White-Smith Music Publishing Co.* considered whether piano-roll players that performed perforated music copies of copyrighted musical composition infringed on the copyright in music composition.[303] The Supreme Court ruled that they did not, as the Copyright Act requires that the work be capable of human perception.[304] Congress disagreed, leading to the addition of the compulsory license for "mechanical" embodiments of musical works in the 1909 Amendment,[305] and the dispensing of the human perception requirement in the 1976 Amendment.[306] In both instances, Congress acted not to protect economic incentives to authors, but to facilitate specific market structures within the industry, which here amounted to concern over the growing cartel of music publishers and their control over the recording of music.[307]

D. Digital Media and Beyond

A full account of the impact of radio, motion pictures, and phonorecords is beyond the scope of this paper, but it is sufficient to note that they each prompted Congress to, after industry lobbying, rewrite the rules of the marketplace to favor entrenched market participants to further specific industry-related structural goals. By way of example, consumer access to audiotape recorders and record piracy led to the Sound Recording Amendment of 1971[308] and the later Audio Home

---

[302] *Id.* at 60-61

[303] *See generally* White-Smith Music Pub. Co. v. Apollo Co., 209 U.S. 1 (1908).

[304] *Id.* at 18.

[305] *See* Howard Abrams, *Copyright's First Compulsory License*, 26 Santa Clara High Tech. L.J. 215, 221 (2009) (citing An Act to Amend and Consolidate the Acts Respecting Copyright, ch. 320, § 1(e), 35 Stat. 1075 (March 4, 1909, effective July 1, 1909)).

[306] *See* H.R. Rep. No. 94-1476, at 52 (1976).

[307] Abrams, *supra* note 305, at 219 (citing H.R. Rep. No. 60-2222 at 8 (1909), *and* S. Rep. No. 60-1108 at 8 (1909)) ("Congress concluded that '[n]ot only would there be a possibility of a great music trust in this country and abroad, but arrangements are actively being made to bring it about.'").

[308] Register of Copyrights, U.S. Copyright Office, Federal Copyright Protection for Pre-1972 Sound Recordings 11 (Dec. 2011) (citing H.R. Rep. No. 92-487 at 2 (1971)), https://www.copyright.gov/docs/sound/pre-72-report.pdf [https://perma.cc/PDE9-CHS2] ("[R]ecord and tape piracy had climbed to alarming proportions as the use of audiotapes and audiotape recorders became increasingly popular and made it easier to make and distribute unauthorized recordings on a commercial scale.").

Recording Act of 1992.[309] Photocopying technologies played a part in several exemptions defined in the 1976 amendments.[310] The danger of market disruption caused by digital filing sharing was known to Congress in the late 1960s, leading to decades worth of investigation that culminated in the enactment of the DMCA in 2001.[311] Perhaps tellingly, the word "incentive" does not appear until 130 pages into the Copyright Office's seminal 2001 DMCA report; also perhaps telling is that it arises solely in the context of the Copyright Office rejecting arguments that a digital first sale doctrine would further the Copyright Incentive Theory.[312]

While the Copyright Incentive Theory presumes that financial incentives for authors are the primary aim of copyright law, an alternative perspective is that encouraging the commodification and commercialization of artistic works is aligned with national economic policy goals. From this critical view, copyright is less about rewarding individual creators and more about facilitating the development of arts and culture as an industry that can be monetized, marketed, and controlled. Copyright law establishes mechanisms for art and creativity to be traded as commodities and granted commercial value rather than existing as freely-available public goods. Therefore, the political-economic function of copyright may be the commodification of culture over and above providing incentives to creators.

Generative AI tools, with their costless productive capabilities and ability of their outputs to serve as perfect market substitutes, require a different contextualization. If human authorship is to remain the focus of American copyright law, it can no longer do so based solely on previous conceptions of originality and the strength of the incentive rationale. Rather, the current conversation should shift toward strengthening the moral rights of human authors, which establish protections based on the personal dignity and creative identity embodied in their works, independent of the economic incentives involved. Moving forward, moral rights may provide a legal framework better suited to preserving

[309] *See* 2 Melville B. Nimmer & David Nimmer, Nimmer on Copyright § 8B.01 (Matthew Bender rev. ed. 2023) (arguing AHRA created *sui generis* entitlements and responsibilities for manufacturers and consumers in the marketplace for digital audio recording systems).

[310] *See* 17 U.S.C. § 108 (creating copyright infringement exemption for public library and archival services in certain noncommercial circumstances).

[311] Digital Millennium Copyright Act ("DMCA") § 104, 17 U.S.C. § 1201 (1998).

[312] U.S. Copyright Off., DMCA Sec. 104 Rep. 88 (2001).

the value of human creativity itself in the age of generative AI. Congress should respond with stronger protections for integrity and attribution beyond the limited ones currently in place.[313]

Conclusion

The issue posed by generative AI is not really whether machines can be authors, but rather, whether the existing system of incentives make sense considering this new technology. Congress has repeatedly addressed this question as new forms of creation have disrupted the marketplace. As generative AI systems produce a near-infinite amount of works in a near-post-scarcity marketplace, abundance, market disruption, and the displacement of human-authored works is all but assured. But the Copyright Incentive Theory has always been a *post hoc* rationalization justifying monopolization, rather than the true basis for copyright law, leaving it ill-equipped to pave a working path going forward. The *real* public debate over generative AI art centers on moral rights in human authored works and whether data scraping those works to generate new art constitutes a mutilation or distortion under the European tradition. There are non-economic interests around attribution, integrity, and human expression that could justify maintaining the existing copyright structure. As costs vanish, a copyright system based on moral rights and intrinsic motivation may better serve the public interest than a system preoccupied with monopolistic incentives and form an area ripe for additional consideration and scholarship.

Rather than engaging in anthropomorphic debates about computer authorship, copyright policy should focus on strengthening moral rights for human authors. If Congress believes that human art deserves more protection than machine outputs, that there is something unique about human intentionality in creating new expression, then it should say so. This requires rethinking standards around derivative works, transformative fair use, and moral rights. If we accept that copyright still serves the public's interest in this new marketplace, then the coming artistic singularity calls for an evolved copyright doctrine that incentivizes generative AI's immense expressive potential for public enrichment, while preserving the integrity of the human works it builds upon. Stronger moral rights

[313] *See generally* Visual Artists Rights Act ("VARA"), Pub. L. No. 101-650, tit. VI, 104 Stat. 5128 (1990) (codified in part in 17 U.S.C. §§ 101, 106A, 107, 113, 301, 411, 412, 501, 506) (1994).

protections from generative AI data-scraping tools, requiring better attribution and better protection from algorithmic mutilation, is a start. The other, more radical abolitionist alternative is moving beyond copyright and its incentives as we approach the artistic singularity.