

TOOLS DO NOT CREATE: HUMAN AUTHORSHIP IN THE USE OF GENERATIVE ARTIFICIAL INTELLIGENCE

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ABSTRACT

Artistic tools, from brushes to complex algorithms, don't create art; human artists do. The advent of generative AI tools like Midjourney, DALL-E, and Stable Diffusion has blurred this understanding, causing observers to believe these tools are the authors of the artworks they produce, even so far as to imagine that the artworks are “created” by the AI in the copyright sense of the word. Not so.

The U.S. Copyright Office recently issued guidance on the copyrightability of works produced using generative AI tools. The Office has accepted the narrative that AI tools perform the steps of authorship, conceiving of the image and rendering it into existence, and denying copyright because randomly or automatically generated works lack human authorship. This interpretation of generative AI is fundamentally flawed.

Contemporary visual generative AI systems can do extraordinary things, but as of yet not autonomously and not automatically. Generative AI systems are tools—highly complex, deeply technological tools to be sure, but tools none the less. And these tools require a human author or artist—the end-user of the generative AI system—to provide the inspiration and design and often the instructions and directions on how to produce the image.

It is a fallacy to view AI systems as the authors of the works they generate. The process of how an end-user of a contemporary generative AI tool creates art and how a human artist goes about the same task are very similar. An artist working with a generative AI tool is no different from an artist working with a digital or analog camera or with Photoshop or another image editing and image rendering tool.

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I. THE MISTAKEN NARRATIVE OF GENERATIVE ARTIFICIAL INTELLIGENCE AUTHORSHIP

Tools do not create. Artistic tools do not create paintings and drawings. Brushes, paint, pencils and pastels, video and photographic cameras, image editing tools such as Adobe Photoshop,² and ever increasingly complicated algorithms in neural networks, foundation models, and large language models are not the authors of artworks. Human artists create content. Human artists use tools to create visual art.

This sketch of the process of creation of art has been blurred in recent months by the advent and rapid adoption of visual generative artificial intelligence (AI) tools such as DALL-E 2,³ Stable Diffusion,⁴ and Midjourney.⁵ The adoption of these tools has inspired magical thinking⁶ regarding the creation of artworks. The very name “generative” AI suggests a narrative that the algorithms, programming, foundation models, and transformer technology composing these AI tools are the actual authors of the works produced—that the artworks are “created” in the copyright sense of the word by the AI. Not so.

The U.S. Copyright Office has recently issued guidance⁷ on the copyrightability of visual works that artists and authors have produced using visual generative AI tools that might be limited in their copyrightability because the works, or elements of the works, were

² Adobe, the Adobe logo, and Photoshop are registered trademarks of Adobe in the United States and other countries.

³ DALL-E 2, OPENAI, <https://openai.com/product/dall-e-2> (last visited Oct. 4, 2023) [<https://perma.cc/7USA-DCAF>].

⁴ STABLE DIFFUSION ONLINE, <https://stablediffusionweb.com/> (last visited Oct. 4, 2023) [<https://perma.cc/766E-33WH>].

⁵ MIDJOURNEY, <https://www.midjourney.com/home/> (last visited Oct. 4, 2023) [<https://perma.cc/TN9B-EQJM>].

⁶ The concept of “magical thinking” is a fallacy in logic and reasoning where obvious disconnects in causation or correlation are ignored in favor of a belief that the causations simply exist, as if by magic. It is also referred to as “associative thinking” or the “post hoc” fallacy. *Magical Thinking*, ART & POPULAR CULTURE, http://www.artandpopularculture.com/Magical_thinking (Nov. 16, 2016, 5:20 PM) [<https://perma.cc/RD68-WQ5N>]; *Post Hoc, Ergo Propter Hoc*, RATIONAL WIKI, https://rationalwiki.org/wiki/Post_hoc,_ergo_propter_hoc (July 21, 2023, 5:26 PM) [<https://perma.cc/2JXR-NEPE>]. Cf. Louis Rosenberg, *Generative AI: The Technology of the Year for 2022*, BIG THINK (Dec. 20, 2022), <https://bigthink.com/the-present/generative-ai-technology-of-year-2022/> [<https://perma.cc/C86T-MQSR>] (discussing how “magical thinking” can be observed in the behavior and output of generative AI).

⁷ Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence, 88 Fed. Reg. 16,190, 16,192 (Mar. 16, 2023) (to be codified at 37 C.F.R. pt. 202).

generated by the AI.⁸ Thus, the Copyright Office has taken the bait and swallowed the narrative that the magic box of generative AI tools actually performs the steps of authorship of original and creative copyrightable works. This stance is supported by the belief that AI somehow “conceives” of the image in its “mind” and somehow “automatically” and “autonomously” renders it into existence in a fixed and tangible medium. The recent guidance of the Office follows the Office’s action to roll back parts of a copyright registration of a comic book with images and illustrations that the author, Kristina Kashtanova, candidly revealed were produced by Ms. Kashtanova with the aid of a generative AI tool, Midjourney.⁹ The Copyright Office explained that it would not grant a copyright to work that was “authored” by an AI,¹⁰ much as it will not grant a copyright over a photograph authored by a macaque monkey,¹¹ or over the growth and appearance of a field of wildflowers originally designed and planted by an artist.¹² These observations alone reveal a real and present confusion in copyright law about the authorship and copyrightability of works created by human authors using AI tools.

II. COPYRIGHT AND THE PROCESS OF ARTISTIC CREATION

I approach this article from the perspective of an artist (a painter) and a copyright and art law scholar. For two decades I have been writing and publishing about artistic creation in the copyright context, explaining how the definitions of “original,” “creative” works “fixed in a tangible medium” track the artistic creation process.

Copyright imposes on authors two basic conceptual requirements:

- original
- creations¹³

⁸ *Id.*

⁹ Letter from Robert J. Kasunic, Assoc. Reg. of Copyrights, U.S. Copyright Off., to Van Lindberg, Taylor English Duma LLP (Feb. 21, 2023) (on file with the U.S. Copyright Office). The Office concluded “that Ms. Kashtanova is the author of the Work’s text as well as the selection, coordination, and arrangement of the Work’s written and visual elements... [but not] the images in the Work *that were generated by the Midjourney technology* [and thus] are not the product of human authorship” (emphasis added).

¹⁰ *Id.*

¹¹ *See* *Naruto v. Slater*, 888 F.3d 418, 422–26 (9th Cir. 2018).

¹² *See* *Kelley v. Chi. Park Dist.*, 635 F.3d 290, 303 (7th Cir. 2011); *see also* Letter from Shira Perlmutter, Reg. of Copyrights, U.S. Copyright Off. Rev. Bd., to Ryan Abbott, Esquire, Brown, Neri, Smith & Khan, LLP (Feb. 14, 2022) (on file with the U.S. Copyright Office) (responding negatively to Stephen Thaler’s second attempt to register an artwork, *A Recent Entrance to Paradise*, which was completely authored and created by an AI).

¹³ *See* 17 U.S.C. § 102(a). “Copyright protection subsists . . . in original works of authorship fixed in any tangible medium of expression[.]”

These two conceptual requirements could be phrased in more typical copyright law terms: the “originality” requirement, and the “creativity” requirement.¹⁴ However, although the use of the terms “originality” and “creativity” is accurate, these terms are legal terms of art that do not bring clarity to the concept of what copyright law requires.¹⁵ I would wager that a large percentage of lay persons and too many lawyers and judges believe that “originality” and “creativity” have something to do with novelty, freshness, or even uniqueness, but this is not the case.

“Original” as an adjective embodying the copyright concept of originality means not copied, not found, not naturally occurring; something that has its origin with the artist.¹⁶ “Created” and “creative” in copyright law mean conceived of and designed in the mind of an artist and subsequently rendered or caused to be rendered into existence by that artist using the available tools of the art-creation process.¹⁷ Since at least the advent of mechanical tools that can be operated at a distance from the mounts and paint products used in image creation,¹⁸ to the technology of photography and later videography, through to the electronic and computer-based tools for the creation and editing of digital art, human authors (artists) have been removed from the surfaces of their paintings and digital creations. Yet, the narrative that authors still conceived of the image that they wanted to create in their minds and rendered it into existence using the tools at hand has not broken our conception of “creation” for purposes of copyrightability.

It is easy to accept the narrative of authorship in the Romantic tradition where individual artists toil over a canvas or paper marking the mount directly with paints or pastels, or blow and twist molten glass, or mold clay with their hands, all to give expression and fixation to the creation that originated in their imagination and envisioning. The narrative blurs ever so slightly when the artist applies the paint more indirectly through a silkscreening, lithographing, or printmaking process, or creates molds where a plastic

¹⁴ See Michael D. Murray, *Generative and AI Authored Artworks and Copyright Law*, 45 HASTINGS COMM’NS & ENT. L. J. 27, 31 (2023).

¹⁵ See *id.*

¹⁶ See LEONARD D. DUBOFF, CHRISTY A. KING & MICHAEL D. MURRAY, *ART LAW IN A NUTSHELL* 210–11 (5th ed. 2017).

¹⁷ See *id.* at 211.

¹⁸ For example, screen-printing, lithography, stamping, and print-making are centuries-old technologies for image creation with tools that have separated the artist from a hands-on application of painting media to the surface of the image. See *Printmaking Techniques*, PACE PRINTS, <https://paceprints.com/techniques> (last visited May 31, 2023) [<https://perma.cc/LAT2-PC8E>].

media is poured to give shape to the creation.¹⁹ Yet it is accepted that all these more mechanical means are still used by the human artist to give expression and fixation to the creation that originated in their imagination and envisioning and do not challenge our narrative of authorship.²⁰



Andy Warhol silkscreening an image.²¹



Dale Chihuly assisted by his gaffers shaping glass.²²

The narrative of authorship cracks right down the middle with photography. The copyright knock on photography from its invention in the 1830's through the 1880's was that there was no creativity and authorship involved in producing photographic images.²³ Photographers simply opened up their cameras' lenses to let the image from the real world in to react with chemical plates, and so to produce an image of the preexisting reality that stood before the photographer.²⁴ The photographer "captured" and "recorded" the scene; he or she did not "create" the scene. The scene was already there in reality.

¹⁹ See generally *id.*

²⁰ See generally *id.*



²¹ Ugo Mulas, Photograph of Andy Warhol and Gerard Malanga silkscreening an image, in *Radical Repetition: A Collector's Guide to Andy Warhol Prints*, CHRISTIE'S (Sept. 19, 2021), <https://www.christies.com/features/How-to-collect-Andy-Warhol-prints-11838-1.aspx> [<https://perma.cc/XT27-NF3F>].

²² Scott Mitchell Leen, Photograph of Dale Chihuly assisted by his gaffers shaping glass, in Shinan Govani, *Up Close and Personal with Frasier Crane's Favourite Glass Artist: The Iconic Dale Chihuly*, TORONTO STAR (Oct. 23, 2020), https://www.thestar.com/entertainment/up-close-and-personal-with-frasier-crane-s-favourite-glass-artist-the-iconic-dale-chihuly/article_ada91030-265a-5113-a509-69bd66f6eff3.html [<https://perma.cc/3QEB-58VS>].

²³ See Terry S. Kogan, *The Enigma of Photography, Depiction, and Copyright Originality*, 25 FORDHAM INTELL. PROP., MEDIA & ENT. L. J. 869, 871–73 (2015).

²⁴ See *Reading: Photography*, LUMEN ART APPRECIATION, <https://courses.lumenlearning.com/masteryart1/chapter/oer-1-23/> (last visited June 29, 2023) [<https://perma.cc/WG96-MGU8>].

It was not easy to view the chemical and mechanical processes of production of photographic images as being an artistic process where individual artists used a tool to give expression and fixation to the creation that originated in their imagination and envisioning. It was easier to find that the camera did all the work of authorship—it was a magic box in which photos were created when the operator just pushed a button. Yet, over the decades, photography became recognized as an art form requiring envisioning, composition, framing, sometimes staging,²⁵ and dozens of other artistic choices exercised by interaction with the tool (the camera) and by actions taken in the film development and print creation process.²⁶

	<p>Staging the scene to create the image of the photograph. <i>Burrow-Giles Lithographic Co. v. Sarony</i>²⁷</p>	 <p>Framing, composition, light level, contrast, focus, and other aspects of the photographic image that are “created” by the photographer. <i>Mannion v. Coors</i>²⁸</p>
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²⁵ For instance, the concept of *mise en scène* in photography and film recognizes the artist’s control over the scene and the expression it communicates. *See generally* Michael D. Murray, *Mise en Scene and the Decisive Moment of Visual Legal Rhetoric*, 68 KAN. L. REV. 241, 259 (2019) (explaining *mise en scène* and its components).

²⁶ *See Burrow-Giles Lithographic Co. v. Sarony*, 111 U.S. 53 (1884). *Sarony* changed the analysis on the copyrightability of photographs when the Supreme Court recognized that Napoleon Sarony “created” the scene that he photographed. In this conception of creativity, Sarony grouped, placed, and arranged the elements of the scene. Sarony took great pains to arrange Oscar Wilde on a certain couch, with a book in his hand, leaning forward, sitting on fur and tapestry drapery, and with a floral backdrop, all of which was set up in Sarony’s studio. The result was the photograph, “Oscar Wilde No. 18,” which the court ruled to have been “created” and “authored” by Sarony and thus was copyrightable.

²⁷ Napoleon Sarony, *Oscar Wilde No. 18* (photograph).

²⁸ Jonathan Mannion, Photograph of Kevin Garnett, in *Above the Clouds*, SLAM, Dec. 1999; Carol H. Williams Advertising, Illustration of a can of Coors Light beer and Kevin Garnett’s torso; *See Mannion v. Coors Brewing Co.*, 377 F. Supp. 2d 444 (S.D.N.Y. 2005).

The creation of digital art may have interrupted some observers' views of Romantic authorship,²⁹ after all, the “artists” were not toiling over a canvas or other mount, applying paint and pigment by hand. But similarities did exist—digital artists often used a stylus or mousepen to draw on a Wacom tablet or touchscreen—and that “look” had the appearance of more traditional methods of painting and drawing.³⁰



Wacom Intuos pen tablet³¹



Drawing and painting on a touchscreen³²

But what of the edits to the image? The filters and image editing tools that change the content and appearance of digital images run on algorithms.³³ Artists communicate their desires and intentions by mouse movement and selection, but the algorithms do the actual image rendering.³⁴ The artist generally gets a preview of the changes and sometimes, as in the right image below, gets a selection of possible renderings from which to choose from,

²⁹ See Thomas Hajdu, *From Duchamp to AI: The Transformation of Authorship in Art*, THE CONVERSATION (Aug. 1, 2023, 9:43 PM), <https://theconversation.com/from-duchamp-to-ai-the-transformation-of-authorship-in-art-210059> [<https://perma.cc/NU99-3L99>].

³⁰ See Editorial Team, *Traditional Art vs Digital Art: Should You Draw with a Tablet or an Ink Pen?*, PIXPA, <https://blog.pixpa.com/traditional-art-vs-digital-art-draw-tablet-ink-pen/#:~:text=Digital%20Drawing&text=It%20allows%20you%20to%20mimic,a%20stylus%20with%20a%20tablet> (last visited Oct. 4, 2022) [<https://perma.cc/CE5Z-Z93N>].

³¹ Photograph of a person using a Wacom Intuos pen tablet, in *Wacom Intuos*, WACOM, <https://wacomstore.ca/product-category/drawingtablets/intuos/> (last visited June 29, 2023) [<https://perma.cc/8KSA-YMG7>].

³² Photograph of a person using an Ugee 1910B Digital Pen Tablet, in Rob Nesbitt, *Why You Really Need an Art Graphics Drawing Tablet*, PROCARTOON (Oct. 16, 2017), <https://procartoon.com/art-graphics-drawing-tablet/> [<https://perma.cc/FUK2-ZWHT>].

³³ See Beck Pura, *AI Photo Editor Guide*, WRK: AUTOMATION BLOG (May 18, 2023, 1:24 PM), <https://www.wrk.com/blog/ai-photo-editor-guide/> [<https://perma.cc/5M68-PX3H>].

³⁴ See Murray, *supra* note 14, at 36.

all of which were rendered by the algorithms of the image editing program. Yet, this is not generally thought of as a disconnect in the authorship narrative.³⁵



Artist using video editing software³⁶



The author using Microsoft Word's Picture Format—Artistic Effects filters on an image in this document³⁷

The aforementioned Copyright Office Guidance on visual generative AI³⁸ discusses whether the outputs of visual generative AI systems are copyrightable. The general guidance of the Office is that generative AI art will be uncopyrightable if it is held to lack human authorship. As noted above, one of the two conceptual requirements of copyrightable works is that they must be “created,”³⁹ which the law defines as conceived of in the mind of a human being⁴⁰ and executed into a fixed and tangible expression.⁴¹ The

³⁵ The recent Copyright Office Registration Guidance on AI candidly stated that “a visual artist who uses Adobe Photoshop to edit an image remains the author of the modified image.” Copyright Registration Guidance, *supra* note 7, at 16,193. Yet in a remarkably prescient observation, the Guidance immediately cautioned artists and authors that “[t]o the extent, however, that an artist uses the AI-powered features in Photoshop, the edits will be subject to the above analysis.” *Id.*, 16,193 n.36. Thus, the Office predicted Adobe’s move to merge the features of its visual generative AI system, Firefly, into Photoshop. *See Adobe Unveils Future of Creative Cloud with Generative AI as a Creative Co-Pilot in Photoshop*, ADOBE (May 23, 2023, 7:00 AM), <https://news.adobe.com/news/news-details/2023/Adobe-Unveils-Future-of-Creative-Cloud-with-Generative-AI-as-a-Creative-Co-Pilot-in-Photoshop-default.aspx/default.aspx> [<https://perma.cc/NCE6-UWUP>].

³⁶ Photograph of an artist using video editing software, in Himal Rustagi, *How to Get Started with Video Editing*, MEDIUM (Mar. 24, 2019), <https://himalrustagi.medium.com/how-to-get-started-with-video-editing-7b6b3336cb74> [<https://perma.cc/B6LW-7F52>].

³⁷ Michael D. Murray, *Image of Author Using Microsoft Word’s Picture Format—Artistic Effects Filters* (photograph).

³⁸ Copyright Registration Guidance, *supra* note 7.

³⁹ *See* 17 U.S.C. § 102(a).

⁴⁰ *See* Trade-Mark Cases, 100 U.S. 82, 94 (1879).

⁴¹ *See, e.g.*, 17 U.S.C. § 102(a); *Google LLC v. Oracle Am., Inc.*, 141 S. Ct. 1183, 1196 (2021); *Cmt’y. for Creative Non-Violence v. Reid*, 490 U.S. 730, 737 (1989).

U.S. Copyright Office has officially stated in its Compendium (Third) of the U.S. Copyright Office Practices that:

[T]he Office will not register works produced by a machine or mere mechanical process that operates randomly or automatically without any creative input or intervention from a human author. The crucial question is “whether the ‘work’ is basically one of human authorship, with the computer [or other device] merely being an assisting instrument, or whether the traditional elements of authorship in the work (literary, artistic, or musical expression or elements of selection, arrangement, etc.) were actually conceived and executed not by man but by a machine.”⁴²

This guidance furthers an even earlier statement in the Compendium (Second) in

1984 that works “produced by mechanical processes or random selection without any contribution by a human author are not registrable.”⁴³

The Copyright Office further clarified this position in its March 16, 2023, Guidance on Works Containing Material Generated by Artificial Intelligence:

AI-generated material . . . described as “autonomously created by a computer algorithm running on a machine . . . [can] not be registered because it was made “without any creative contribution from a human actor.” . . . In the Office’s view, it is well-established that copyright can protect only material that is the product of human creativity . . . [and] it “will not register works produced by a machine or mere mechanical process that operates randomly or automatically without any creative input or intervention from a human author.”⁴⁴

The radical core of this concept is sound: randomly or automatically generated works do not have human authorship; they are not conceived of in the minds of human authors and the human authors do not cause their inner conceptions and designs to be rendered into

⁴² U.S. COPYRIGHT OFF., COMPENDIUM OF U.S. COPYRIGHT OFFICE PRACTICES § 313.2 (3d ed. 2021) (quoting U.S. COPYRIGHT OFF., REPORT TO THE LIBRARIAN OF CONGRESS BY THE REGISTER OF COPYRIGHTS 5 (1966)).

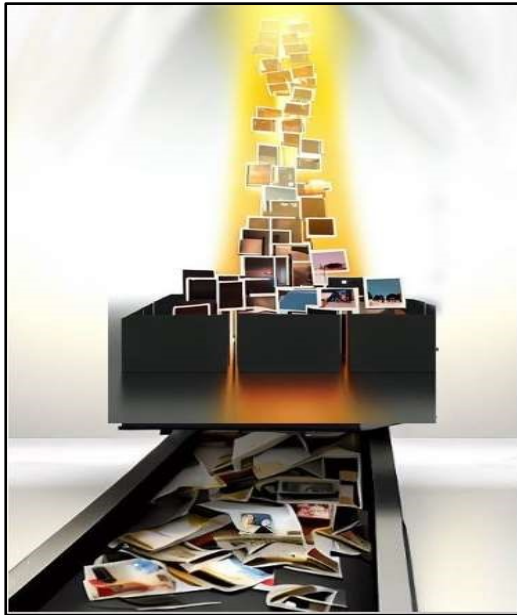
⁴³ U.S. COPYRIGHT OFFICE, COMPENDIUM OF U.S. COPYRIGHT OFFICE PRACTICES § 503.03(a) (2d ed. 1984).

⁴⁴ Copyright Registration Guidance, *supra* note 7.

fixed and tangible forms. The error comes from the Copyright Office’s thinking that generative AI systems randomly or automatically create and generate works.

III. THE FALLACY OF THE “MAGIC BOX” CONCEPTION OF GENERATIVE AI

The “Magic Box” concept of visual generative AI is that in all or most instances the AI randomly or automatically creates and generates works of art.⁴⁵ Many of the participants in the current debate on visual generative AI systems—including, it seems, the United States Copyright Office—have latched onto the idea that generative AI systems have been trained on datasets and foundation models that contained data from image files scraped from the internet, that the generative AI system *randomly* or *automatically* conceives of images to create in its *mind*, and then *randomly* or *automatically* generates final images



with or without a human author or artist being involved in the process (see image at left).⁴⁶ This is magical thinking.⁴⁷

Visual generative AI systems are a complex and advanced technology, but no matter what Arthur C. Clarke might say, they are not magic.⁴⁸ A visual generative AI is not an impenetrable magic box that will take “suggestions” from humans but then randomly and automatically create images on its own. Instead, generative AI systems are tools—highly complex, deeply technological tools to be sure, but tools none the less. And these tools require a human author or artist—the end-user of the generative AI system—to provide the

inspiration and design and often the instructions and directions on how to produce the image. An artist working with a generative AI tool is no different from an artist working with a digital or analog camera or with Photoshop or another image editing and image rendering tool.

⁴⁵ See *supra* pg. 77.

⁴⁶ Michael D. Murray, *Magic Box* (illustration) (using Bing Image Creator, powered by DALL-E).

⁴⁷ See generally sources cited *supra* note 6 (explaining magical thinking).

⁴⁸ Arthur C. Clarke stated as his third law of prediction of the future: “Any sufficiently advanced technology is indistinguishable from magic.” ARTHUR C. CLARKE, PROFILES OF THE FUTURE: AN ENQUIRY INTO THE LIMITS OF THE POSSIBLE 21 n.1 (rev. ed. 1973).

The fallacy of how visual generative AI systems produce art no doubt arises in part because the systems are so capable and appear to be so “smart” and “talented.”⁴⁹ We tend to personify creatures and things that appear to have intelligence, attributing to them not only thought but artistic ingenuity, but in the end an AI system is a tool, a complex machine.⁵⁰ It remembers, it writes, it may even speak,⁵¹ and its visual outputs appear artistic and creative even if it did not engage in actual creativity. But for now, a visual generative AI system is not self-aware, it can only mimic creativity, and its artistic production depends on how the artist end-user tells it to produce an artwork.⁵²

A thorough explanation of how the current generation of visual generative AI systems operate is beyond the scope of this article, but I have endeavored to explain and illustrate the processes elsewhere.⁵³ The conclusions I draw from the study of visual generative AI is that:

- AI does not make a creative artistic decision about the contents of the art; it only responds to a human prompt and then generates images according to its training and programming. AI should not be personified as the actual author of the generative AI image. The end-user is the author and artist of the image.⁵⁴
- In the process of creation, generative AI does not make creative design decisions, it follows rules and parameters (translated into algorithms) to generate output that the human end-user first directs in the initial prompt, and then evaluates and chooses to accept or reject in each set of samples generated by the AI tool.⁵⁵ Human end-users using the AI tool usually are given several image options from

⁴⁹ See Melanie Mitchell, *How Do We Know How Smart AI Systems Are?*, SCIENCE (July 13, 2023), <https://www.science.org/doi/10.1126/science.adj5957> [<https://perma.cc/8UH6-ZT9H>].

⁵⁰ See Rosenberg, *supra* note 6; Will Knight, *When AI Makes Art, Humans Supply the Creative Spark*, WIRED (July 13, 2022, 7:00 AM), <https://www.wired.com/story/when-ai-makes-art/> [<https://perma.cc/V2UA-4JTR>].

⁵¹ See *Generative AI: What It Is and Why It Matters*, SAS, https://www.sas.com/en_us/insights/analytics/generative-ai.html (last visited Sept. 29, 2023) [<https://perma.cc/5URM-67C8>].

⁵² See Rosenberg, *supra* note 6; Knight, *supra* note 50.

⁵³ See Michael D. Murray, *Generative AI Art: Copyright Infringement and Fair Use*, 26-2 SMU SCI. & TECH. L. REV. (forthcoming 2023) (manuscript at 24-32) (on file with journal).

⁵⁴ *Id.* at 34. See also Rosenberg, *supra* note 6; Knight, *supra* note 50.

⁵⁵ Murray, *supra* note 53, at 34.

which they can choose,⁵⁶ or they can rerun the same prompt to generate a new group of images, or they can revise the prompt in multiple iterations and generate a completely new set of images based on each revised prompt until the end-user causes the AI to generate the image envisioned and designed by the end-user.⁵⁷

- Human artists and creators control the art generated by the AI by the prompts that they write and revise. Thus, the human artists examine the works produced in the process and either accept the fruits of the process or they keep going with different or revised prompts. This is exactly similar to the process of creating sketches, studies, or drafts (iterations of a creative artistic project) until the artist is happy with the design, composition, framing, perspective, point of view, and the results of the techniques being used.⁵⁸

The process of how an end-user of a contemporary generative AI tool creates art and how a human artist creates art without AI are very similar.⁵⁹

⁵⁶ Stable Diffusion XL Playground produces four images as a default generation set responsive to a creation prompt. See STABLE DIFFUSION, <https://stablediffusionweb.com/#demo> (last visited Sept. 29, 2023) [<https://perma.cc/2LJ2-LSK8>].

⁵⁷ Murray, *supra* note 53, at 34.

⁵⁸ See generally Marion Botella et al., *What Are the Stages of the Creative Process? What Visual Art Students Are Saying*, 9 FRONTIERS PSYCH. 1, 2–6 (2018) (discussing stages of research, trials or sketches, techniques, and evaluation); Matt Fussell, *The Creative Process*, VIRTUAL INSTRUCTOR, <https://thevirtualinstructor.com/blog/the-creative-process> (last visited Jan. 12, 2023) (reviewing stages of research, production, critique, and rework) [<https://perma.cc/M2KZ-LHUE>].

⁵⁹ The table below follows the steps of the creative process described by Botella and Fussell. See Botella et al., *supra* note 58; Fussell, *supra* note 58. See also Murray, *supra* note 53, at 34–36.

Human Artists not using AI	End-Users of Visual Generative AI Tools
A human artist conceives of and designs a work.	An end-user of a visual generative AI tool conceives of and designs a work.
A human artist envisions what the image should look like drawing from images and other information the artist has been trained on or exposed to, and the human artist may be further guided and inspired by research involving preexisting images and information about schools, and genres, and techniques of art, all to determine, “What does this type of image look like.” ⁶⁰	The end-user’s prompt causes the generative AI tool to follow the prompt instructions and conditions and, drawing from the lessons of images and text data it has been trained on, determines, “What does this type of image look like.”
A human artist follows an inner vision and creates preliminary sketches, studies, or drafts for evaluation to determine the most desirable elements of the image (composition, style, genre, etc.) and the best techniques to achieve that image – i.e., “What is the best way to render this image.”	Following the end-user’s prompt instructions and conditions, the AI tool generates an initial diverse set of images with elements (composition, etc.) that match the terms in the prompt, and the end-user evaluates the samples and makes determinations about the most desirable elements (composition, style, genre, etc.) of the image – i.e., “What is the best way to render this image.” ⁶¹
A human artist reworks the sketches, studies, or drafts to best meet the requirements of the inner vision – i.e., “What should the final image look like.”	The end-user engages in refinement (re-prompting) that causes the AI to delete unnecessary elements of images and retain the best elements based on the directions and conditions of the prompts – i.e., “What should the final image look like.”
Ultimately, the human artist creates a work that the artist accepts and adopts as the final iteration of the project – i.e., “this is the image that should be used.”	Ultimately, the end-user accepts and adopts a final iteration for the project – i.e., “this is the image that should be used.”

⁶⁰ See Botella et al., *supra* note 58.

⁶¹ See *id.*

Perhaps a failure of imagination contributes to the fallacy of Magic Box thinking. It certainly is the case that less skill, less training, and less talent is required to produce art using a contemporary visual generative AI system compared to traditional artistic tools. The fact that it is easier for an untrained artist to use generative AI tools than traditional tools and methods of art creation should not trouble the Copyright Office and the art law community—it has been known since at least the *Feist Publications v. Rural Telephone Service* case in 1991 that “sweat of the brow” is not the touchstone of authorship and copyrightability of works.⁶² There is less romance and emotion in the generative AI process, but the steps are most definitely similar if not functionally and substantially the same as the process of creation followed by a human artist.

III. AUTHORSHIP IN THE CHOICE AND SELECTION OF IMAGES

The Copyright Office stated in its March 16, 2023 Registration Guidance that authorship of a work sufficient to establish copyright protection can be achieved by a human author’s “selection” of non-human generated content.⁶³ In the context of generative AI art in the *Kashtanova-Zarya of the Dawn* case,⁶⁴ the Copyright Office ruled that Kashtanova was the author and owner of a copyright over the comic book⁶⁵ by virtue of the artist’s selection, coordination, and arrangement of the comic’s written and visual elements, but she did not own a copyright over the individual images appearing in the work because, in the Office’s interpretation, the Midjourney AI tool had independently conceived of and created, or randomly or automatically created, the individual images in the comic, and so Kashtanova was not the author of the artworks she generated by using the Midjourney tool.⁶⁶ This section explores why the Copyright Office’s distinction and judgment are incorrect.

⁶² *Feist Publ’ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 359–60 (1991).

⁶³ An artist can “qualify for copyright protection if there is human selection and arrangement” of non-human generated content. *Copyright Registration Guidance* at 16190, *supra* note 28.

⁶⁴ Robert J. Kasunic, *Re: Zarya of the Dawn (Registration # VAu001480196)*, UNITED STATES COPYRIGHT OFFICE (Feb. 21, 2023), <https://www.copyright.gov/docs/zarya-of-the-dawn.pdf> [<https://perma.cc/WZR8-3Y36>].

⁶⁵ *Id.*

⁶⁶ The Office concluded, “that Ms. Kashtanova is the author of the Work’s text as well as the selection, coordination, and arrangement of the Work’s written and visual elements [but not] the images in the Work *that were generated by the Midjourney technology* [and] are not the product of human authorship.” *Id.* (emphasis added).

“Selection” is an important concept in art creation.⁶⁷ Many artists have relied on selection as being a bona fide act of creation transforming an incomplete or non-artistic item and making it art.⁶⁸ When explaining how Marcel Duchamp could purchase a urinal at a hardware store and turn it into a work of art submitted under the name “Fountain” and using an artist’s pseudonym “R. Mutt” for a major art exhibition, an art review in *The Blind Man* art magazine, perhaps written by Mr. Duchamp himself, stated that, “Whether Mr. Mutt with his own hands made the fountain or not has no importance. He CHOSE it.”⁶⁹

Selection and choice and the adoption of a final end product as a mark of authorship and artistic creation are integral to the processes of several of the twentieth century’s greatest artists.



Jackson Pollock, the famed American artist credited with co-founding with Willem de Kooning) the abstract expressionism movement,⁷⁰ and with developing the action painting and the drip painting technique, chose to introduce many random and unpredictable elements into his drip paintings but that was his intentional creative act and design.⁷¹ It was an experimental trajectory of paint or a “controlled accident.”⁷² Pollock caused the drips and lines to appear with some direction if not exactitude of placement. Pollock’s intentional eschewing of exactitude in the placement of the paint caused a certain amount of randomness to enter into the expression, but the artist was in control of the process from start to finish and he could choose not to adopt a work that did not meet his creative objectives. After running through his creative process successfully he accepted and adopted the end product as his creation.⁷³

⁶⁷ Keith Lehrer, *Artistic Creation, Freedom, and Self*, OXFORD ACADEMIC, (Jan. 19, 2012), <https://doi.org/10.1093/acprof:oso/9780195304985.003.0006> [<https://perma.cc/5A3D-WM5M>].

⁶⁸ *Id.*

⁶⁹ See William A. Camfield, *Marcel Duchamp's Fountain: Its History and Aesthetics in the Context of 1917*, 16 DADA/ SURREALISM 64, 76 (1987); see also Sandra M. Aistars, *Visualizing Copyright Law: Lessons from Conceptual Artists*, 56 Akron L. Rev. 101, 111 (2023).

⁷⁰ *Abstract Expressionism*, BRITANNICA (May 31, 2023), <https://www.britannica.com/art/Abstract-Expressionism> [<https://perma.cc/V2YS-WN7Z>].

⁷¹ Isabella Meyer, *Artistic Creation, Freedom, and Self*, ART IN CONTEXT (Aug. 1, 2023), <https://artincontext.org/jackson-pollock/> [<https://perma.cc/C2S2-NWGX>].

⁷² Annikka Olsen, *21 Facts About Jackson Pollock*, SOTHEY'S (Oct. 10, 2018), <https://www.sothebys.com/en/articles/21-facts-about-jackson-pollock> [<https://perma.cc/W472-AETJ>].

⁷³ *Id.*

⁷⁴Ansel Adams, one of most recognized and honored American photographers, expressed concepts that have become integral to the understanding of photography as an art form.⁷⁵ Adams said, “You don’t take a photograph, you make it” through a process of visualization before taking the photo and “dodging” and “burning” (adjusting the exposure) in the dark room.⁷⁶ Adams said, “When I’m ready to make a photograph, I think I quite obviously see in my mind’s eye something that is not literally there in the true meaning of the word. I’m interested in something which is built up from within, rather than just extracted from without.”⁷⁷ The inherent variables between the light emitting from the scene, the lens, the camera settings, and the initial exposure on the film led to Adams’ needing to make artistic choices and alterations in the dark room before choosing an iteration and adopting a final image. A reviewer noted, Adams’ “negatives are famous for being nothing like the prints Ansel produce . . . most of the magic was created in the darkroom.”⁷⁸



Street photographer Philip Lorca diCorcia employed a photographic technique with a built-in randomness factor when he set up strobe lights in a strategic location in scaffolding above a New York City sidewalk and used a camera on a tripod with a radio-controlled mechanism to set the shutter clicking to capture the portraits of passersby without their knowledge.⁷⁹ The normal photographic elements authored by a photographer—framing, composition, contrast, focus, and other intentional design elements of photographic images⁸⁰—were absent because of diCorcia’s choice of method in capturing the images. After sifting through the several thousand exposures captured, diCorcia selected seventeen portraits for exhibition, such as the portrait of Erno Nussenzweig shown here, exhibited as Head #13.⁸¹ The choice and selection of the correct images that matched the inner vision of the types of images he wanted to create was the creative act of authorship by Mr. diCorcia.

I assume throughout this discussion that the Copyright Office does not literally believe that generative AI tools are completely autonomous and that other than being non-human they fulfil the copyrightable standards of originality and creativity by envisioning a work on their own and rendering it into existence autonomously. And after autonomously creating works, the narrative must play out that the AI just contacts some human, such

⁷⁴ Ansel Adams, *Thunderstorm, Yosemite Valley* (photograph), in THE ANSEL ADAMS GALLERY (last updated Aug. 29, 2022), <https://www.anseladams.com/thunderstorm-yosemite-valley/> [<https://perma.cc/9K4U-3GSD>].

as Kristina Kashtanova, and says, “Hey, I created a bunch of images. Maybe you could use them for your *Zarya of the Dawn* comic.” I intend for this scenario to sound ridiculous because when one observes how human artists actually make use of generative AI tools, one should not be so ready to find that the images emitted by the AI tool were authored by the AI “without any creative contribution from a human actor.”⁸² Instead, it should be readily apparent in all but the most extreme cases⁸³ that the human author “provided sufficient creative input or intervention in the Work”⁸⁴ or “[undertook] the arrangements necessary for the creation of the work”⁸⁵ to claim both authorship and a copyright in the outputs of the AI system.

⁷⁵ Joshua Dunlop, *10 Best Ansel Adams Quotes (Photography Inspiration)*, EXPERT PHOTOGRAPHY (Sept. 21, 2023), <https://expertphotography.com/top-10-ansel-adams-quotes/> [<https://perma.cc/JFW8-VQCK>].

⁷⁶ *Id.*

⁷⁷ *Ansel Adams: A Documentary Film* (PBS broadcast Apr. 21, 2002).

⁷⁸ *Ansel Adams – magic card*, ICELANDAURORA (last visited Jun. 30, 2023), <https://www.icelandaurora.com/phototutorials/ansel-adams-magic-card/#> [<https://perma.cc/VHU8-DDK4>].

⁷⁹ Philip Gelter, *Street Photography: A Right or Invasion?*, NEW YORK TIMES (Mar. 17, 2005), <https://www.nytimes.com/2006/03/17/arts/street-photography-a-right-or-invasion.html> [<https://perma.cc/7D7E-NPDN>].

⁸⁰ Sandra, *Back to the Basics: 10 Composition Rules in Photography*, DEPOSITPHOTOS (Dec. 7, 2016), <https://blog.depositphotos.com/back-to-basics-10-composition-rules-in-photography.html> [<https://perma.cc/TJF7-HNVW>].

⁸¹ Philip-Lorca diCorcia, *Head #13* (photograph of Erno Nussenzweig), (2000). See Ashley Yu, *Impact-Philip Lorca diCorcia: Head On*, MUSÉE MAGAZINE (Sep. 23, 2019), <https://museemagazine.com/features/2019/9/23/impact-philip-lorca-dicorcia-head-on> [<https://perma.cc/UC3K-H8Q4>].

⁸² *Copyright Registration Guidance*, *supra* note 28.

⁸³ The extreme cases I imagine are accidental entries of unintended gibberish, hitting enter after your cat walked across the keyboard, or similar “accidents.” See generally *Alfred Bell & Co. v. Catalda Fine Arts*, 191 F.2d 99, 105 (2d Cir. 1951) (no copyright for accidents). The discussion in this article does not dwell on the use of AI for what I would describe as the equivalent of absent-minded doodling, which might occur if an end-user prompted the AI simply to “draw something,” or “paint a picture.” If such a prompt was made to a chat-based AI that also engages in visual generation, such as Bing Chat, it is very likely the AI would reply back, “What would you like me to draw?” calling on the end-user to engage in the envisioning process of authorship. But even if the end-user was supremely unspecific in the prompt, the end-user would still engage in the artistic authorship process of choosing and selecting one or more of the images offered by the AI.

⁸⁴ COMPENDIUM (THIRD) OF THE U.S. COPYRIGHT OFFICE PRACTICES § 313.2, *supra* note 35.

⁸⁵ NEW ZEALAND COPYRIGHT ACT OF 1994 § 5(2)(a), (updated May 31, 2023), <https://www.legislation.govt.nz/act/public/1994/0143/latest/DLM345899.html> [<https://perma.cc/35QW-WED2>].

IV. AUTHORSHIP IN THE COMPOSITION OF IMAGES

Artists compose images, sometimes in the straightforward act of choosing the size and shape of mount to work on and rendering the images that will fill that space; sometimes in the handling and shaping of clay or a plastic modeling material; sometimes in the camera's viewfinder or in the darkroom; and sometimes on a computer screen. Because photography appears to be the "magic box" analogy that is most apt for evaluating the use of visual generative AI systems, it is worthwhile to break down the creative acts of composition in relation to the photographic arts.



Staging as Composition: There is little doubt or confusion regarding the fact that the photographer Napoleon Sarony composed this scene because he staged it himself. As noted above,⁸⁶ Sarony created the scene that he photographed when he grouped, placed, and arranged the elements of the scene. He took great pains to arrange Oscar Wilde on a certain couch, with a book in his hand, leaning forward, sitting on fur and tapestry drapery, with a floral backdrop, all of which he set up in his studio.

Knowing where to stand to capture the decisive moment: On the other end of the scale from staging a scene is being able to compose a scene in a moment's time, framing the image according to the design of the mind's eye—and knowing where to stand to be in a position to capture such a moment.⁸⁷ The image here⁸⁸ is deemed to be a masterpiece that embodies the "Decisive Moment" of composition, expressed by CartierBresson as "the simultaneous recognition, in a fraction of a second, of the significance of an event as well as of a precise organization of forms which give that event its proper expression."⁸⁹



⁸⁶ Mitch Tuchman, *Supremely Wilde*, SMITHSONIAN MAGAZINE (May 2004), <https://www.smithsonianmag.com/arts-culture/supremely-wilde-99998178/> [<https://perma.cc/9U2V-ZYVN>].

⁸⁷ I am combining the wisdom and insight of Ansel Adams ("A good photograph is knowing where to stand."), see Dunlop, *supra* note 59, and Henri Cartier Bresson ("The creative act lasts but a brief moment, a lightning instant of give-and-take, just long enough for you to level the camera and to trap the fleeting prey in your little box."), quoted in TIME-LIFE LIBRARY OF PHOTOGRAPHY, PHOTOGRAPHY YEAR 1980 22 (1980); see also CLEMENT CHEROUX, A BIBLE FOR PHOTOGRAPHERS 15 (1952), insert to HENRI CARTIER-BRESSON, THE DECISIVE MOMENT (1952) (the French ed. title is IMAGES À LA SAUVETTE – which may be translated as "Images in haste," or "Furtive images").

⁸⁸ Henri Cartier-Bresson, *The Puddle*, or *Behind the Gare Saint-Lazare* (photograph) (1932).

⁸⁹ *The Decisive Moment*, COLUMBIA MAGAZINE (2016), <https://magazine.columbia.edu/article/decisive-moment> [<https://perma.cc/K2YX-WZ59>].



Choosing the Point of View and Perspective: In this classic VJ Day photograph⁹⁰ celebrating the end of WWII, Alfred Eisenstaedt chose the exact right point of view and perspective with the classic architecture of Times Square in the background, the right balance of by-standers cheerfully giving focus to the scene before them, and the striking contrast of the white-clad outfit of the dental assistant against the black Navy uniform of the sailor. Compositionally, although the dominant subjects are featured dead center in the image, the lines in the street, the vectors of the buildings, and the by-standers' focus, all point to the dominant subjects in an eye-pleasing manner.⁹¹

Capturing the Pathos in the Narrative of the Scene: This Depression Era photograph of Dust Bowl migrants shown at right here⁹² is remarkable for the way that the mother, the central figure, is shown with wrinkles in all of her “worry spots,” prematurely aged by her experiences, giving a 1,000 mile stare into an unknown future, surrounded not by happy cherubs but by grimy children with homemade chopped haircuts, who cannot bear the outside attention, and bury their faces from the camera’s viewing. A third child is barely visible on the mother’s lap, indicating that the mother’s circumstances are so grave that she cannot focus even on a tiny child’s needs in this situation. The author of the photograph, Dorothea Lange, has managed to tell an entire story in a photograph.



Far from being a magic box that creates photographs, the cameras held in the hands of these human artists did not compose these images. The images were envisioned and created by the human artists who knew how their tool worked, and who intervened and controlled the operation of this mechanical tool. The acts of authorship in the creation of

⁹⁰ Alfred Eisenstaedt, *Photograph of sailor kissing white-clad woman in Times Square, V-J Day, Aug. 14, 1945*, in *Victory Celebrations*, LIFE MAGAZINE (Aug. 27, 1945).

⁹¹ Regarding the four photographs of “the kiss” he was able to take, Eisenstaedt favored the perspective and composition of the second, the Life magazine photograph, explaining, “Only one is right, on account of the balance. In the others the emphasis is wrong — the sailor on the left side is either too small or too tall. People tell me that when I am in heaven they will remember this picture.” ALFRED EISENSTAEDT, EISENSTAEDT ON EISENSTAEDT, as quoted in *V-J Day kiss in Times Square, 1945*, RARE HISTORICAL PHOTOS (Oct. 7, 2016), <https://rarehistoricalphotos.com/v-j-day-kiss-times-square-1945/> [<https://perma.cc/6KTH-CRJE>].

⁹² Dorothea Lange, *Migrant Mother* (photograph) (1936), <http://hdl.loc.gov/loc.pnp/fsa.8b29516> [<https://perma.cc/L8VA-DUUE>].

these images are directly comparable to the acts of authorship by the end-user of a visual generative AI system:

- **Envisioning and Visualization:** At the most basic level, a human who approaches a visual generative AI tool must visualize the work they would like the AI tool to generate. Thus, the work is “conceived of in the mind of a human.” Visualization is key to most art forms. Photography, as described by Ansel Adams, depends on forming a visualization in the photographer’s mind’s eye and taking the steps necessary to bring about the final image, i.e., rendering the fixed and tangible expression of the image in the mind’s eye.⁹³ Jackson Pollock knew the sort of work he wanted to create, perhaps not in a level of detail that compares to Ansel Adams’ visualization, but still enough to know how to get started creating the work and when to call it finished.
- **Crafting and Iterating:** A human artist follows an inner vision and creates preliminary sketches, studies, or drafts for evaluation to determine the most desirable elements of the image (composition, style, genre, etc.) and the best techniques to achieve that image – i.e., “What is the best way to render this image.” Ansel Adams was reported to have produced his best work through multiple iterations in the darkroom.⁹⁴ The same is true for a human artist using an AI tool. Following the end-user’s prompt instructions and conditions, the AI tool generates an initial diverse set of images with elements (composition, etc.) that match the terms in the prompt and the end-user evaluates the samples and makes determinations about the most desirable elements (composition, style, genre, etc.) of the image.⁹⁵ While a traditional human artist might then rework the sketches, studies, or drafts, or run through several contact sheets of exposures of single images on a negative to determine the image that best matches their inner vision, a human artist using an AI tool engages in refinement (re-prompting) that causes the AI to delete unnecessary elements of images and retain the best elements based on the directions and conditions of the prompts so the human artist can produce a work that matches their inner vision.

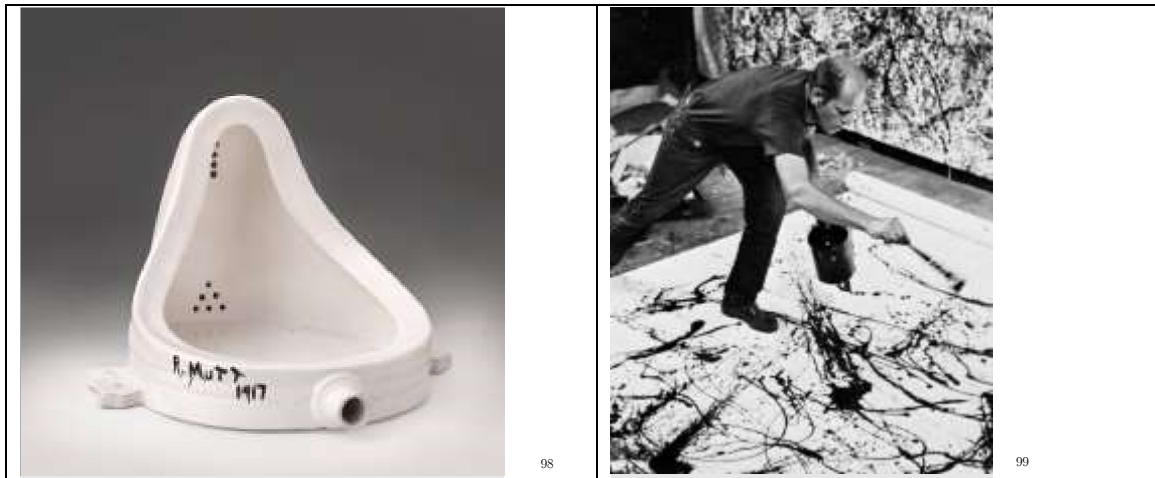
⁹³ Hudson Brown, *The Greats: How Ansel Adams’ Visualization Techniques Will Better Your Photos*, URTH MAGAZINE (Dec. 4, 2019), <https://magazine.urth.co/articles/ansel-adams-visualisation> [<https://perma.cc/Y6JS-YPJK>].

⁹⁴ *See Id.*

⁹⁵ *See generally Taking a Peek into the Future: Artificial Intelligence (AI) NFTs*, BINANCE (Feb. 8, 2023), <https://www.binance.com/en/blog/nft/taking-a-peek-into-the-future-artificial-intelligence-ai-nfts-4439585965730878046> [<https://perma.cc/H8UB-CSQZ>].

Yes, there is one large difference in technique between more traditional artists and artists using AI tools: artists using generative AI can speak their design and composition ideas directly to the generative AI system through prompts.⁹⁶ The remarkable innovation of the current revolution in visual generative AI is that it drastically narrows the gap between the “haves” who have artistic skill and the training and experience to know how to use it, and the “have nots” who may not have as much skill, and have little or no training or experience in expressing the ideas of their inner artistic vision, but now a person in this second group can speak to an AI system in steps and iterations to cause the AI tool to issue a work that expresses in a fixed and tangible medium the vision in the person’s mind’s eye.⁹⁷

Selection and Adoption: Marcel Duchamp selected a white porcelain urinal, displayed it upside down and in reverse orientation, added a title, “Fountain,” and scrawled an artist’s signature on it, “R. Mutt,” and the year, “1917,” and by these actions of selection and recontextualization, created a work of art that still is being discussed today.



Jackson Pollock applied paint in a somewhat random, unspecific manner, but when Pollock observed that he had achieved the vision of his mind in an iteration of the drip

⁹⁶ *Id.*

⁹⁷ See generally Laurie Clarke, *When AI can make Art – What does it mean for Creativity?*, THE OBSERVER (Nov. 12, 2022), <https://www.theguardian.com/technology/2022/nov/12/when-ai-can-make-art-what-does-it-mean-for-creativity-dall-e-midjourney> [<https://perma.cc/x222-vxhd>].

⁹⁸ Marcel Duchamp, *Fountain* (1917), SF MOMA, <https://www.sfmoma.org/artwork/98.291/> [<https://perma.cc/LR4Z-8758>].

⁹⁹ Francis Valentine O’Connor, *Jackson Pollock*, BRITANNICA (Aug 9, 2023), <https://www.britannica.com/biography/Jackson-Pollock> [<https://perma.cc/NN5T-RQYX>].

painting, he then selected that iteration as the final iteration and adopted it as the final work.

The same process occurs with generative AI. An artist operates the AI tool by giving it prompt instructions according to the image the artist has envisioned, such as “Emma Watson in the style of John Singer Sargent’s *Madame X*, or Janelle Monáe in the style of Andy Warhol, and the AI tool will offer a set of iterations of the image. The artist might have struck gold with the first prompt, but otherwise alters the images by communicating different prompt instructions or simply by requesting a new set of images. The following sets of iterations of an image were generated by the author using the Stable Diffusion Playground tool:



¹⁰⁰ MICHAEL D. MURRAY, *Emma Watson in the Style of John Singer Sargent’s Madame X* (first iterations, 2022).

¹⁰¹ MICHAEL D. MURRAY, *Janelle Monáe in the Style of Andy Warhol* (first iterations, 2022).



What is the correct framing and interpretation of what occurred in these images' creation? —that I walked up to the computer and Stable Diffusion said, “Hey, Mike. Look at what I created today. I thought I would render eight images of Emma Watson in the style of John Singer Sargent’s *Madame X*, and eight images of Janelle Monáe in the style of Andy Warhol.” Not so. I envisioned an image and devised a prompt that would cause the generative AI tool to render the image at my direction. The fact that the AI is designed to give me four iterations of images all conditioned by the same prompt allowed me both to refine my inner vision of what I wanted to see in a final image, and to re-prompt to redirect the tool toward my vision. I am the author of these iterations, and would continue to direct the operation of the AI tool until it produced an image I would determine to be complete and would adopt as the final image.

V. TRULY AUTONOMOUS AI CREATION VS. PREPROGRAMMED RANDOMIZED ELEMENTS

There will come a day, perhaps this year or next, when an AI system reaches what has been labeled as the “point of singularity” and becomes a true artificial general intelligence entity with agency and the ability to act autonomously on its own initiative and motivation. But even today, some humans, generally persons who are designers and trainers of AI who want to promote the acceptance of AI, will claim that their AI is an

¹⁰² MICHAEL D. MURRAY, *Emma Watson in the Style of John Singer Sargent’s Madame X* (refinement iterations, 2022).

¹⁰³ MICHAEL D. MURRAY, *Janelle Monáe in the Style of Andy Warhol* (refinement iterations, 2022).

autonomous author of creative works and patentable inventions.¹⁰⁴ The prime instigator of this position, Stephen Thaler, would have us understand that his AI system, the Creativity Machine, woke up one morning and conceived of a painting that it then rendered into fixed and tangible form, and called it “A Recent Entrance to Paradise,” and Thaler didn’t have a thing to do with it. (Thaler would have you leave aside for the moment the fact that Thaler created the AI tool and programmed it with painterly skills.¹⁰⁵). Perhaps Thaler’s AI tool does run autonomously, and perhaps it creates works on its own initiative.¹⁰⁶ If such conditions are met, then it appears to run automatically into the Copyright Office’s definition of a machine that creates works “automatically” and “autonomously” and as to which no human author “provided sufficient creative input or intervention in the Work”¹⁰⁷ to claim authorship. But even if the Creativity Machine fails the current U.S. Copyright Office definition, Stephen Thaler might still fit the UK and New Zealand definition of a developer of an AI tool created and programmed by a human who “[undertook] the arrangements necessary for the creation of the work,”¹⁰⁸ thus creating the scenario where the AI “appeared” to do all the work but it was actually Thaler who made the arrangements allowing the work to be produced. There are AI systems, recently made famous by the 2021-2022 Non-Fungible Token

¹⁰⁴ U.S. COPYRIGHT OFF. REV. BD., *Decision Affirming Refusal of Registration of a Recent Entrance to Paradise*, Archive of Copyright Office Rulings and Government Briefs in Copyright Case, COPYRIGHT.GOV, (Feb. 14, 2022) <https://www.copyright.gov/rulings-filings/review-board/docs/a-recent-entrance-to-paradise.pdf> [<https://perma.cc/WZR8-3Y36>], (denying the copyright registration for a work that Dr. Stephen Thaler submitted to the Copyright Office, the Review Board decision alleged in no uncertain terms that the work had been independently and autonomously created by an AI called the “Creativity Machine.”).

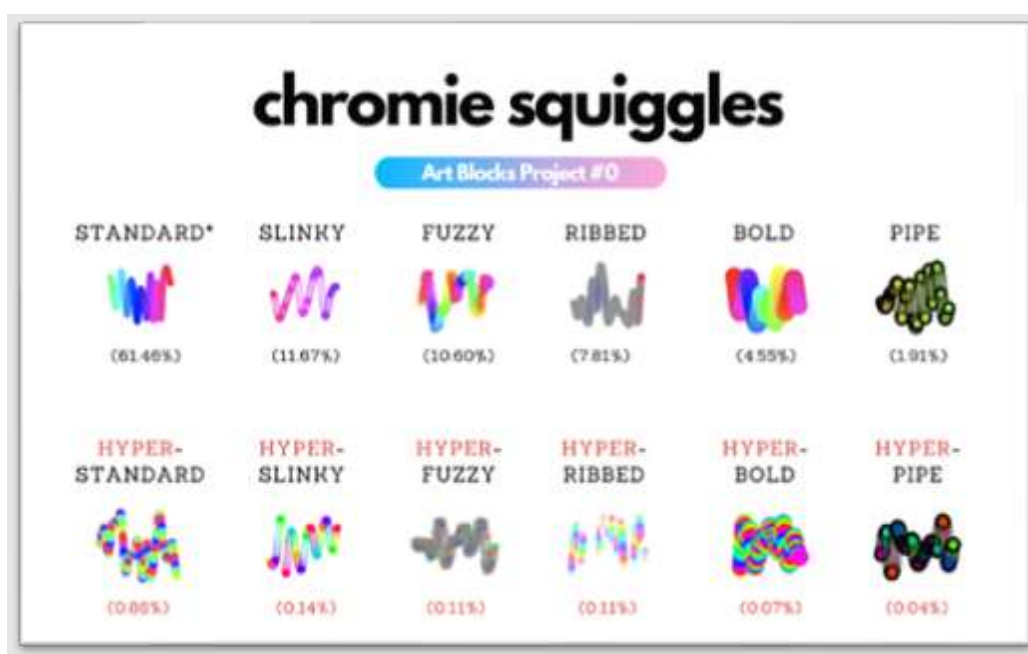
¹⁰⁵ Tina Hesman, *Computer Creativity Machine Simulated the Human Brain*, ST. LOUIS DISPATCH (Jan. 24, 2004), http://www.umsl.edu/~sauterv/DSS/creativitymachine_12504.html [<https://perma.cc/W7F8-3GFX>].

¹⁰⁶ Thaler’s legal argument for why he should be filing an application for registration of a copyright was that Creativity Machine was his employee—meaning, he “owned” it—and that he therefore owned the copyright over the work, “A Recent Entrance to Paradise” by virtue of the work-for-hire doctrine. *See* U.S. COPYRIGHT OFF. REV. BD., *supra* note 104.

¹⁰⁷ U.S. COPYRIGHT OFFICE, COMPENDIUM OF U.S. COPYRIGHT OFFICE PRACTICES § 313.2 (3d. ed. 2021), *supra* note 35.

¹⁰⁸ UK Copyright, *Designs and Patents Act 1988* § 9, <https://www.legislation.gov.uk/ukpga/1988/48/section/9/enacted> [<https://perma.cc/XC7Z-RT7R>] (quoting, “In the case of a literary, dramatic, musical or artistic work which is computer-generated, the author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken”); *see also* New Zealand Copy Right Act 1994 § 5(2)(a), <https://www.legislation.govt.nz/act/public/1994/0143/latest/DLM345899.html> [<https://perma.cc/WD6P-6EUG>].

(NFT) boom, that appear to operate semi-autonomously—i.e., by a “push a button and mint an NFT” mode—but which were in fact created and designed by programmers who “[undertook] the arrangements necessary for the creation of the work.”¹⁰⁹ The Chromie Squiggles and other Art Blocks projects¹¹⁰ use a method where a programmer has coded the script for an art generation program into a smart contract on a blockchain where anyone can pay the fee and run the script and create a new work of art.¹¹¹ The process of creation is initiated by someone other than the programmer and the initiator has no creative input into the work. The work of art is instantly tokenized and stored on the blockchain without any intervention or involvement of the programmer or the purchaser other than paying for the mint and hitting the “button.”¹¹²



Chromie Squiggles, a popular and at times expensive NFT collection, are not created (minted) until a purchaser completes the purchase and sets off the “create the artwork”

¹⁰⁹ UK Copyright, *supra* note 108. The entire quote in context is: “In the case of a literary, dramatic, musical or artistic work which is computer-generated, the author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken.” *See also* New Zealand Copyright Act 1994, *supra* note 108.

¹¹⁰ *See generally*, ART BLOCKS, <https://www.artblocks.io/> [<https://perma.cc/F6YY-785X>].

¹¹¹ CHROMIE SQUIGGLES EXPLORER, (last visited Jun. 14, 2022) <https://chromie-squiggles.com/> [<https://perma.cc/2H6A-XFUA>].

¹¹² *See id.*

process.¹¹³ Arguably, the NFT purchaser is the author because the purchaser pressed the button that caused the artwork (squiggle) to be created. But that sounds a lot like Naruto, the macaque monkey, who encountered an instrumentality left in place by the human photographer David Slater, and pushed a button and caused an image to be taken.¹¹⁴ The Ninth Circuit ruled that in that scenario, Naruto was the author of the selfie image it took, but the image could not be copyrighted because the author of the image was a non-human.¹¹⁵ However, a human being who pushes a button and causes an image to be created would seem to be able to claim the same status as “author” of the image, and this time it is a human author who can claim a copyright over the image.

Although the outcome is possible that one who pays for an artwork to be created and pushes a button causing it to be created becomes the author of the artwork, this conclusion bears further examination because the creator/programmer of Chromie Squiggles, Erick Calderon (Snowfro), has written a computer program with “rules” and designed the algorithm to make sure the works come out in a general wormlike “squiggle” shape.¹¹⁶ There is a significant amount of quality control baked into the project, as one reviewer described:

artists . . . have to make sure today to create a script that doesn’t create any bad outputs. Once minted by someone, the artist can’t delete a piece. Every new iteration is as visible as any other one, putting pressure on the artist to create a script that only runs good outputs. One single bad result lowers the quality of the whole collection.¹¹⁷

Even if a purchaser hits the start button or causes the process to run, the programmer’s creative conception and design is all over these creations, and the randomness that makes each creation unique is a carefully controlled randomness by the programming of the developer of the AI tool. The programmers and creators of the AI “[undertook] the

¹¹³ Eliot Couvat, *Chromie Squiggles & the On-chain Generative Art Movement*, GLOBAL COIN RESEARCH (Aug. 25, 2021), <https://globalcoinresearch.com/2021/08/25/chromie-squiggles-the-on-chain-generative-art-movement/> [<https://perma.cc/D2LW-D8H3>].

¹¹⁴ *See* *Naruto v. Slater*, 888 F.3d 418, 422–26 (9th Cir. 2018).

¹¹⁵ *Id.*

¹¹⁶ CHROMIE SQUIGGLES EXPLORER, <https://chromie-squiggles.com/random-squiggle-generator> [<https://perma.cc/NZM9-FPFT>].

¹¹⁷ Eliot Covat, *supra* note 113.

arrangements necessary for the creation of the work”¹¹⁸ and should be able take credit for the artworks produced and thus identify themselves as the authors. This situation is anticipated under UK and New Zealand law. Section 9(3) of the UK Copyright, Designs and Patents Act 1988 states: "In the case of a literary, dramatic, musical or artistic work which is computer-generated, the author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken."¹¹⁹

The legal basis for claiming authorship by the programming of the AI that created the work is a start, but as noted above, what will seal the deal is evidence that the human programmer intentionally trained the AI to produce work of the human programmer’s creative design and intentions. This position negates the autonomous creation narrative that deep learning AI strives to achieve. But it will allow someone to be the author who has standing to be an author.

A different kind of AI will produce images based on a set of random parameters or features.¹²⁰ The creator/programmer designs a base image and sets a series of parameters or features that will be randomly selected for a piece, such as hair style and hair color, background color, eyes or eyewear, jewelry, mouth, accessories, and so on.¹²¹ When a buyer purchases or claims the NFT, the NFT art is assembled by a random selection from the available features— green hair, cigarette in mouth, silver earring, and so on—such that the purchaser knows they are buying into a series with the same base image, but other than that the purchaser has no idea what exactly they have purchased until they buy it and order it to be minted.¹²² This is the method used for many NFT projects including the very popular and at times very expensive Bored Ape Yacht Club, CryptoPunks, and World of Women NFTs.

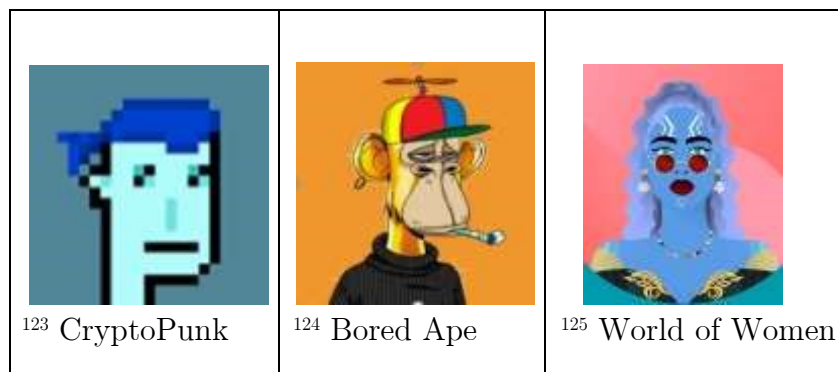
¹¹⁸ See UK Copyright, *supra* note 108. The entire quote in context is: "In the case of a literary, dramatic, musical or artistic work which is computer-generated, the author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken." See also New Zealand Copyright Act 1994, *supra* note 108.

¹¹⁹ See *supra* note 116.

¹²⁰ See generally Rohit Kundu, *AI-Generated Art: From Text to Images & Beyond [Examples]*, V9 (Jul. 1, 2022), <https://www.v7labs.com/blog/ai-generated-art> [<https://perma.cc/Vl33-UMYC>].

¹²¹ *Id.*

¹²² Eliot Covat, *supra* note 113.



These images are digital works with randomly shuffled attributes and images rendered through technologies designed to the specifications of artists and programmers and whose works the artists and programmers adopt as their own. The artist/programmers have created (envisioned and brought into a fixed and tangible medium) each attribute that will be in the deck when it is shuffled. They also designed and created the base image, which is in effect a paper doll on which the randomly shuffled elements will be hung. These creative acts should meet copyrightability authorship requirements. Whether the artist/programmers decide to retain total control over the copyrights or to assign or grant licenses to the works to the purchasers of the works is a standard question for any author of expressive works that are created for purchase by others.

VI. CONCLUSIONS

Contemporary visual generative AI systems can do extraordinary things, but as of yet not autonomously and not automatically. It is a fallacy to view AI systems as the authors of the works they generate. The process of how an end-user of a contemporary generative AI tool creates art and how a human artist goes about the same task are very similar. Generative AI systems are tools—highly complex, deeply technological tools to be sure, but tools none the less. And these tools require a human author or artist—the end-user of

¹²³ Michael D. Murray, *Cropped Thumbnail-Sized Version of Larva Labs, CRYPTOPUNK #5822* (2017), <https://dl.openseauserdata.com/cache/originImage/files/ee29834c76764b35886807884a2f4ff8.png> [<https://perma.cc/QK5D-YL6M>] (citing OPENSEA, *listing for CryptoPunk #5822*).

¹²⁴ MICHAEL D. MURRAY, *Cropped Thumbnail-size Version of Yuga Labs, BORED APE YACHT CLUB #8817* (2021), <https://opensea.io/assets/ethereum/0xbc4ca0eda7647a8ab7c2061c2e118a18a936f13d/8817> [<https://perma.cc/4GJG-JQ3C>].

¹²⁵ MICHAEL D. MURRAY, *Cropped Thumbnail-sized Version of Yam Karkri, WORLD OF WOMAN #64* (last visited Jun. 13, 2022), <https://dl.openseauserdata.com/cache/originImage/files/129a71bb9c0d312fb3c1464132023930.png> [<https://perma.cc/DM7N-5CM6>].

the generative-AI system—to provide the inspiration and design and often the instructions and directions on how to produce the image. An artist working with a generative AI tool is no different from an artist working with a digital or analog camera or with Photoshop or another image editing and image rendering tool.

Human artists create works using a generative AI tool by the artistic acts of envisioning and visualization, crafting and iterating, and selecting and adopting a final image from the output the human caused the AI tool to produce. In the process of creation, generative AI does not make creative design decisions, it follows rules and parameters (translated into algorithms) to generate output that the human end-user first directs in the initial prompt, and then evaluates and chooses to accept or reject in each set of samples generated by the AI tool. Human end-users using the AI tool usually are given several image options from which they can choose, or they can rerun the same prompt to generate a new group of images, or they can revise the prompt in multiple iterations and generate a completely new set of images based on each revised prompt until the end-user causes the AI to generate the image envisioned and designed by the end-user.

Human artists and creators control the art generated by the AI by the prompts that they write and revise. Thus, the human artists examine the works produced in the process and either accept the fruits of the process or they keep going with different or revised prompts. This is exactly like the process of creating sketches, studies, or drafts (iterations of a creative artistic project) until the artist is happy with the design, composition, framing, perspective, point of view, and the results of the techniques being used.

Therefore, there may come a day, perhaps this year or next, when an AI system reaches what has been labeled as the point of singularity and becomes a true artificial general intelligence entity with agency and the ability to act autonomously on its own initiative and motivation. That AI entity might exercise that agency and autonomy to envision works on its own and render them into a fixed and tangible medium. And that AI will be the author of those works. But for now, humans using AI tools are the authors of the works they create.