Artificial Intelligence and Evolving Issues Under
U.S. Copyright and Patent Law

by

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Abstract

The proliferation of AI tools in the arts, commercial design industries, and other endeavors has raised core questions regarding who or what actually supplied the alleged creative or inventive elements, if any, to the AI system's output. In both U.S. copyright and patent law the question focuses on a case-by-case analysis as to how much of the final product evidences human "authorship" or invention. Also, creativity as well as infringement, can be located in various phases of the AI system's creation, ingestion of training materials, management, and operation – including its output, whether affected prior to the output or after it. Issues such as liability for selecting ingestion materials or target data, as well as the potential inadvertent triggering of patent law's bar date through use of specific AI systems, have also come to the forefront of AI's potential to secure, forfeit, or impact claimed proprietary rights in AI-assisted creative and inventive activities. Several alternative intellectual property and unfair competition approaches that can supplement or supplant copyright and patent law principles also come into play as users of AI seek to protect the products of their efforts.

I. Introduction

A general way to describe the present state of artificial intelligence ("AI") is that it leverages computers and machines to mimic the problem-solving and decision-making capabilities of the human mind.[2] The use and manipulation of AI systems and their results – including the "hype"

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[2] *See* https://www.ibm.com/topics/artificial-intelligence. (last visited April 3, 2023). If a more detailed and somewhat "official definition" of AI is preferred, the U.S. National Defense Authorization Act provides the following at Section 1051 f. of P.L. 115-232 (National Security Commission on Artificial Intelligence; Annual

surrounding them[3] – have raised profound legal and ethical issues and have sparked debate regarding proprietary rights that may apply to AI systems and the results of their use. The initial parts of this discussion will focus on concepts of AI-related authorship under U.S. copyright law and AI-related inventorship under U.S. patent law.[4] Other selected, related issues will also be discussed, including whether proprietary rights other than copyrights and patents can serve to protect AI technologies and AI-generated content.

II. Preliminary Considerations

Under Article 1 Section 8, Clause 8 of the U.S. Constitution, Congress has the power "[t]o 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."[5] In providing this power to Congress, the framers of the Constitution presumed that the grant of exclusive rights would encourage "the creation and spread of knowledge and learning"[6] and spur "technological innovation, advancement, or social benefit."[7] The underlying premise of this approach is that the "encouragement of individual effort by personal gain is the best way to advance public welfare through the talents of authors and inventors."[8] This focus on exclusivity

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Budget Bill; Fiscal Year 2019):

DEFINITION OF ARTIFICIAL INTELLIGENCE.—In this section, the term ''artificial intelligence'' includes each of the following: (1) Any artificial system that performs tasks under varying and unpredictable circumstances without significant human oversight, or that can learn from experience and improve performance when exposed to data sets. (2) An artificial system developed in computer software, physical hardware, or other context that solves tasks requiring human-like perception, cognition, planning, learning, communication, or physical action. (3) An artificial system designed to think or act like a human, including cognitive architectures and neural networks. (4) A set of techniques, including machine learning that is designed to approximate a cognitive task. (5) An artificial system designed to act rationally, including an intelligent software agent or embodied robot that achieves goals using perception, planning, reasoning, learning, communicating, decision-making, and acting. *See* https://www.nscai.gov/about/authorization-act/#:~:text=%E2%80%94In%20this%20section%2C%20the %20term,when%20exposed%20to%20data%20sets (last visited April 8, 2023); *see also* https://www.govinfo.gov/content/pkg/BILLS-117hr7683ih/html/BILLS-117hr7683ih.htm (last visited April 8, 2023).

[3] *See, e.g.,* Gartner Research, *Understanding Gartner's Hype Cycles*, published Aug. 20, 2018. https://www.gartner.com/en/documents/3887767 (last visited April 7, 2013); *see also,* James Vincent, *How Three French Students Used Borrowed Code To Put The First AI Portrait In Christie's*, The Verge, Oct. 23, 2018, https://www.theverge.com/2018/10/23/18013190/ai-art-portrait-auction-christies-belamy-obvious-robbie-barrat-gans (last visited April 7, 2023); Caroline Goldstein, *Has The AI-Generated Art Bubble Already Burst? Buyers Greeted Two Newly Offered Works at Sotheby's With Lackluster Demand*, artnet® news, Nov. 15, 2019, https://news.artnet.com/market/obvious-art-sale-sothebys-1705608 (last visited April 7, 2023).

[4] AI systems may move beyond mimicking human thought processes, but the core questions about AI will, for purposes of this present discussion, concern what is generally perceived as the present state of the technology.

[5] *See* National Archives, *The Constitution of the United States: A Transcription*, https://www.archives.gov/founding-docs/constitution-transcript (last visited April 2, 2023).

[6] *See generally,* https://constitution.congress.gov/browse/essay/artI-S8-C8-1/ALDE_00013060/ (last visited April 3, 2023), *citing Golan v. Holder*, 565 U.S. 302, 324 (2012).

[7] *See generally*, https://constitution.congress.gov/browse/essay/artI-S8-C8-1/ALDE_00013060/ (last visited April 3, 2023), *citing Graham v. John Deere Co. of Kan. City*, 383 U.S. *1, 6 (1966)*.

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

and personal gain as the impetus to creation and invention can be traced back to British notions of the role of copyrights and patents in promoting the public interest in education and commerce.[9] Moreover, in order to fulfill the important role of encouraging innovation, the definitions of "Writings" and "Discoveries" have been adapted or expanded by Congress and the courts to encompass changes in media and technology. In other words, these definitions have broadened over time to keep pace with advances in "Science" and the "Useful Arts." A lack of flexibility in approach – *i.e.,* chaining the definition to the state of science and technology that existed at the time of the drafting of Article 1 Section 8, Clause 8 – would defeat the core purpose of encouraging and rewarding ongoing innovation and dissemination of knowledge. However, until the important technological, commercial, and cultural ramifications of AI became apparent, there was rarely a need to seriously consider whether the framers of Article 1 Section 8, Clause 8 intended "Authors" and "Inventors" to mean <u>human</u> authors and inventors. There were instances where the issue arose, such as with regard to creations by animals[10] and alleged creations by non-human or spiritual entities,[11] but, frankly, the commercial interests in those enterprises were not significant enough to spark much more than intriguing, *albeit* largely academic, debate. Rather, when, at least from commercial and social perspectives, more important issues of origination arose, as in the rise of the photography and genetic engineering industries,[12] the debate tended to focus on how much of the subject matter was created by human beings and how much was either supplied solely by the technology or by naturally occurring phenomena that did not reflect human creation. Put another way, until machines acquired the capability to mimic or exceed human thought processes, the presumed requirement of human involvement in "authorship" and "inventorship" remained undisturbed. Now, AI has forced the question of whether the terms "Authors" and "Inventors" should be read as flexibly as the terms "Writings" and "Inventions" so that the "Progress of Science and useful Arts" can be best served.

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[9] The U.S. approach to copyright can (generally) trace its origin back to the British 1710 Statute of Ann and the roots of the U.S. patent system can be found in the English Parliament's 1623 Statute of Monopolies. Each of these respective laws sought to encourage the socially beneficial acts of authorship and invention through awards of exclusive, *albeit* limited, rights. This is not to discount, however, that various aspects of copyright and patent law are affected by, *e.g.,* the special interests of specific industries, targeted lobbying efforts, and the selective impetus toward international harmonization.

[10] *See Naruto v. Slater,* 888 F.3d 418 (9th Cir. 2018), *reh'g denied,* 916 F.3d 1148 (2018); Christopher Bavitz and Kendra Albert, The *"Monkey Selfie" Case: Can Non-Humans Hold Copyrights?,* Berkman Klein Luncheon Series, Jan. 3, 2018, https://cyber.harvard.edu/events/2018/luncheon/01/monkeyselfie (last visited April 7, 2023); Anna Norris, *Can Elephants Really Paint?, Treehugger*, May 13, 2020, https://www.treehugger.com/can-elephants-really-paint-4864229 (last visited April 7, 2023).

[11] For example, in the Compendium of U.S. Copyright Office Practices, the Copyright Office notes that it will refuse to register a claim of copyright for a song naming the Holy Spirit as the author of the work. *See* U.S. COPYRIGHT OFFICE, COMPENDIUM OF U.S. COPYRIGHT OFFICE PRACTICES § 313.2 (3d ed. 2021). Moreover, issues of estoppel can arise when, for example, a "transcriber" claimed that her work was dictated by the ghost of Mark Twain. *See* Parker Higgins, *How Mark Twain's Ghost Almost Set Off The Copyright Battle Of The Century*, *Splinter,* March, 2016, https://splinternews.com/how-mark-twains-ghost-almost-set-off-the-copyright-batt-1793855099 (last visited April 7, 2023).

[12] *See Diamond v. Chakrabarty*, 447 U.S. 303 (1980)(patentability of genetically engineered microorganisms); *Association for Molecular Pathology v. Myriad Genetics, Inc.,* 569 U.S. 576 (2013)(identification and isolation of naturally occurring genes does not constitute inventorship; human manipulation of genes may be patentable subject matter).

In thinking about the requirements of "human origination" under the copyright and patent laws, the core questions are: (1) did a human being originate any or all of the subject matter? and (2) if a human being did not originate every aspect of the subject matter, what portion comprises the "human contribution?" The use of AI to achieve or assist in generating the result(s) for which copyright or patent protection are sought, raises a number of considerations that invoke or seek to circumvent those questions. Moreover, there are a number of stages in AI processes or AI-assisted processes in which the "spark" of human creativity may be evident. For example, a non-exhaustive list of points of potential authorship or inventorship can include: (1) the corporation or other entity (if any) that commissioned the development of the AI technology, such as the algorithm(s); (2) the creator(s) of the AI technology, such as the algorithm(s); (3) the individual(s) who coded the system; (4) the individual(s) who defined the goals, biases, or training materials employed in the AI system; (5) the individual(s) who intervened in the particular AI process or task to affect the result; or (6) the individual(s) who took a product of the AI process and modified it or added content to it that expresses at least a modicum of post-AI originality.[13] Of course, this latter scenario – the addition of a "human element" to the AI end product – fits very comfortably in traditional notions of authorship and inventorship.[14] Authors frequently "borrow" from, or find inspiration in, pre-existing materials and inventors often improve upon or find new uses for items or processes that already exist. In the realm of copyright the process is demonstrated by Andy Warhol's spectacularly successful modifications of prior third-party works to create new ones.[15] This is a staple technique in numerous artforms, although very few practitioners would adopt Warhol's explanation – "I want to be a machine" – for the use of depersonalizing commonality and repetition in the artistic process."[16]   The key, however, is that there are a number of competing interests that underlie the creation of AI systems, their employment, and their products. No matter the result, however, it is clear that intellectual property laws (and contract law applicable to, *e.g.,* transfers and licenses) will play robust parts in the development of the industry and the commercialization of its products.

[13] A brief, instructive discussion of the use of Generative Adversarial Networks (GANs) AI approach to generating art, music, and literature can be found at: Abdulhady A. Feteiha, *Artificial Art: How GANs are making machines creative,* Heartbeat, Sept. 23, 2019, https://heartbeat.fritz.ai/artificial-art-how-gans-are-making-machines-creative-b99105627198 (last visited April 7, 2023); *see also*, Kenny Jones*, GANGogh: Creating Art with GANs*, Towards Data Science, June 18, 2017 for a description of a GANs AI art generation project, https://towardsdatascience.com/gangogh-creating-art-with-gans-8d087d8f74a1 (last visited April 7, 2023).

[14] *See, e.g., Bleistein v. Donaldson Lithographing Co.,* 188 U.S. 239 (1903)(copyright); *Ansehl v. Puritan Pharm. Co.,* 61 F.2d 131, 136 (8th Cir. 1932)(copyright); *Alfred Bell & Co. v. Catalda Fine Arts, Inc.,* 191 F.2d 99, 106 n.13 (2d Cir. 1951)(copyright); 35 U.S. §101 (patent)("Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.").

[15] *See* Roger Kamholtz, *Andy Warhol and His Process, Contemporary Art*, Nov. 10, 2013; https://www.sothebys.com/en/articles/andy-warhol-and-his-process (last visited April 7, 2023). This approach, however, is not without risk: tensions regarding copyright law's prohibition against infringing derivative works and the doctrine of fair use can arise. *See, e.g., Andy Warhol Foundation for the Visual Arts, Inc. v. Goldsmith,* 11 F.4th 26 (2nd Cir. 2021), *cert. granted* 142 S.Ct. 1412 (Mem), (March 28, 2022).

[16] For those seeking to examine Warhol's statement in context, it can be found in Interview With Gene Swenson – Andy Warhol, https://theoria.art-zoo.com/interview-with-gene-swenson-andy-warhol/ (last visited April 7, 2023), originally *published as 'What Is Pop Art? Interviews with Eight Painters (Part 1), Art News, New York, November 1963*. He used the sentiment in the context of being non-judgmental and also used it to explain his use of silk screening techniques that allow for a commonality in his work.

III. U.S. Copyright and AI

As the use of AI systems in the creation of expressive works continues to grow in terms of applications and economic consequences, it was inevitable that the core issues of AI and human creativity would surface in the context of the U.S. copyright registration process.[17] This section of the discussion will focus on "the frontline" territory of the copyright registration process – a process that, in most cases, is the prerequisite to enforcement of a copyright claim.[18] Also a selection of relevant U.S. judicial decisions and other considerations will be discussed.

A. The Copyright Office

As stated by the Copyright Office, examination of an application to register an expressive work in which AI played a role, "[b]egins by asking ''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."[19] In the case of works containing AI-generated material, the inquiry will focus on the extent to which that content does or does not reflect the original mental conceptions of a purported human author.[20] This will, as the Copyright Office notes, necessarily include a case-by-case inquiry.[21] These concepts recently came into play in the two recent AI-related applications considered by the Copyright Office discussed below.

On November 3, 2018, Steven Thaler[22] filed an application to register his claim of copyright in a two-dimensional artwork titled *A Recent Entrance to Paradise*.[23] The work, shown below, was

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[17] Notably, the U.S. Copyright Office has (relatively) long ago stated that it will refuse to register a claim in a work that is "created through the operation of a machine or process without any human interaction, even if the design is randomly generated." *See* U.S. COPYRIGHT OFFICE, COMPENDIUM OF U.S. COPYRIGHT OFFICE PRACTICES § 313.2 (3d ed. 2021).

[18] *See Fourth Estate Public Benefit Corporation v. Wall-Street.com, LLC,* 139 S.Ct. 881 (2019).

[19] Federal Register / Vol. 88, No. 51 / Thursday, March 16, 2023 / Rules and Regulations, p. 16192.

[20] *Id.*

[21] *Id.*

[22] Stephen Thaler is the President & CEO of Imagine Engines, Inc., as well as member of The Artificial Inventor Project which describes itself as follows: " The Artificial Inventor Project includes a series of *pro bono* legal test cases seeking intellectual property rights for AI-generated output in the absence of a traditional human inventor or author. It is intended to promote dialog about the social, economic, and legal impact of frontier technologies such as AI and to generate stakeholder guidance on the protectability of AI-generated output." *See* https://artificialinventor.com/. (last visited April 5, 2023).

[23] *See* Second Request for Reconsideration for Refusal to Register A Recent Entrance to Paradise (Correspondence ID 1-3ZPC6C3; SR # 1-7100387071) Letter Opinion of The Review Board of the United States Copyright Office (Feb. 14, 2022).

described by Thaler as having been "autonomously created by a computer algorithm running on a machine" which Thaler described as a "Creativity Machine."[24]

As described in the Copyright Office's discussion of the issues, Thaler did not claim direct authorship of any aspect of *A Recent Entrance to Paradise.* Rather, Thaler claimed status as author of the work based on his ownership of the Creativity Machine. In essence, Thaler argued that the machine, with its AI-implemented decision processes, was the equivalent of a regular employee under U.S. copyright's work made for hire doctrine. Therefore, according to Thaler, authorship of *A Recent Entrance to Paradise* should be attributed to him. However, although the complexity of, *e.g.,* color and composition, seems indistinguishable from artworks that could be attributed to a human "Author," *A Recent Entrance to Paradise* was, according to Thaler's application to register the claimed copyright, created solely by a machine. This was, in accordance with long-standing principles of U.S. copyright law, fatal to Thaler's claim. No matter how aesthetically pleasing or compelling, works created by or attributed to non-human entities have been routinely disqualified by courts and the Copyright Office from the realm of "works of authorship." Therefore, a painting made by an elephant (no matter how rigorously

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[24] The Copyright Office will accept at face value an assertion that a work was created by a non-human entity. *See* U.S. COPYRIGHT OFFICE, COMPENDIUM OF U.S. COPYRIGHT OFFICE PRACTICES § 602.4(C) (3d ed. 2021). This acceptance allows the Copyright Office to avoid thorny questions about, for example, the actual existence of spiritual beings or the intricacies of technological operations that the applicant has chosen to avoid or overlook.

trained by its human handlers) or a work described as dictated by a spiritual being[25] are not works of authorship, as contemplated by the U.S. Constitution and U.S. copyright laws. Without human expression, there can be no copyright protection. Thaler seized on this precedent and argued that the requirement of "human authorship" is unconstitutional. He also noted that under the work made for hire doctrine non-human entities, such as corporations, can be accorded the status of "Authors" for purposes of the copyright law.

On February 14, 2022 the Review Board of the United States Copyright Office issued its opinion rejecting Thaler's claim that the creations of his Creativity Machine qualified as copyrightable subject matter. In the Board's words: "[T]he [Copyright] Office is compelled to follow Supreme Court precedent, which makes human authorship an essential element of copyright protection."[26] In essence, the Board determined that the presumption or understanding that copyright requires human authorship permeated judicial precedent, and Thaler did not present a compelling argument to disturb centuries of such precedent (or presumption). This position also vitiated Thaler's work made for hire theory because, without a qualifying work as its subject, there can be no application of the work made for hire doctrine.

Notably, Thaler's Creativity Machine and its product, *A Recent Entrance to Paradise,* were presented in a manner that seems calculated to avoid the traditional balancing test that focuses on how much human expression and originality are evidenced in the subject work. Rather, Thaler presented a blunt, straightforward question: Can a machine be recognized as an "Author" under U.S. copyright law and the language of the Constitution on which it is premised? The Copyright Office's answer was a resounding "No." But perhaps there is a bit of tactical "legal engineering" in play. Thaler seems to have fought an uphill battle to move the battle to the top of the hill, *i.e.,* Congress and the Supreme Court.

Shortly after the Copyright Office Review Board's consideration of the Thaler application, a more nuanced version of the "AI versus human authorship" issue arose. However, the issue arose in the context of the Copyright Office's desire to correct or cancel a registration that it issued without knowing that the subject involved a significant amount of AI-generated content.

On February 21, 2023, in a letter signed by Robert J. Kasunic, Associate Register of Copyrights and Director of the Office of Registration Policy and Practice (the *Kashtanova* Letter), the Copyright Office affirmed its position that copyright will not extend to works in which "the traditional elements of authorship" were generated by a machine.[27] The letter concerned the

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[25] The Copyright Office will not register a work purportedly created by divine or supernatural beings, although the Office may register a work where the application or the deposit copy(ies) state that the work was inspired by a divine spirit. *See* U.S. COPYRIGHT OFFICE, COMPENDIUM OF U.S. COPYRIGHT OFFICE PRACTICES § 313.2 (3d ed. 2021). Therefore, one of the examples of a work for which registration will not be granted is "[a]n application for a song naming the Holy Spirit as the author of the work." *Id.*

[26] Board Letter, p. 4, citing *Burrow-Giles Lithographic Co. v. Sarony*, 111 U.S. 53, 56-59 (1884) (photography); *Mazer v. Stein,* 347 U.S. 201, 214 (1954)(sculpture); and *Goldstein v. California,* 412 U.S. 546, 561(1973) (audio recordings).

[27] *See* U.S. Copyright Office, Cancellation Decision re: *Zarya of the Dawn* (VAu001480196) (Feb. 21, 2023), https:// www.copyright.gov/docs/zarya-of-the-dawn.pdf.

correction of the certificate of copyright registration for a work titled *Zarya of the Dawn.* The subject work is a comic book created by artist Kristina Kashtanova using elements of her own authorship as well as elements provided by Midjourney, an AI system capable of generating images in response to text "prompts" provided by a user.[28] In arguing against cancellation of the certificate of registration, Kashtanova asserted that: (1) she authored every aspect of the work, with Midjourney serving as an assistive tool; and (2) alternatively, portions of *Zarya of the Dawn* are registrable because the text was authored by Kashtanova and the full work is a copyrightable compilation due to her creative selection, coordination, and arrangement of the text and images.

As noted earlier in this discussion, Kashtanova's arguments raised technological and conceptual nuances that were absent in the earlier Thaler assertions, which focused on a work allegedly created <u>solely</u> by a machine. Instead, Kashtanova's position focused on her alleged control of, and intercession in, the process that resulted in the complete work, *Zarya of the Dawn.*[29] This set the stage for the arguably more technologically-informed analysis of the role of AI in the creation of *Zarya of the Dawn.* Not surprisingly, the Copyright Office undertook an analysis that segregated or "filtered" the machine-created elements from the creative elements supplied by Kashtanova. The premise, of course, was that if a machine supplied an element without sufficient creative and original input from Kashtanova that element would comprise non-copyrightable subject matter. Ultimately, the Copyright Office acknowledged that Kashtanova's creation of the "text" in *Zarya of the Dawn* and her "selection, coordination, and arrangement of text created by the author and artwork generated by artificial intelligence" qualifies for copyright protection, *i.e.,* they comprise traditionally recognized works of authorship.[30] However, the material in *Zarya of the Dawn* generated by the Midjourney AI program was excluded from copyright protection.[31] This approach also included the balancing test that sought to determine the proportionality of AI-versus-human input in the resulting elements of the work.

A key image from the cover of *Zarya of the Dawn* is shown below and is representative of the type of imagery considered by the Copyright Office in its *Kashtanova Letter*:

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[28] Midjourney is a subscription and downloadable software service that offers a number of versions of subscriber-accessible programs that produce images in response to a user's verbal prompts. *See* https://docs.midjourney.com/docs/models (last visited April 8, 2023). In recent applications to register its claimed word mark "MIDJOURNEY," Midjourney, Inc. described the subject matter, in part, as: (1) "Software as a service (SaaS) services featuring software for generating images from text; software as a service (SaaS) services featuring software providing for searching, licensing, purchasing and downloading digital content; providing a website featuring non-downloadable software using artificial intelligence for generating images from text," S*ee* U.S. Trademark Application Ser. No. 97597218, filed Sept. 19, 2022; and (2) "Downloadable computer software and application software for generating images from text; downloadable computer software and application software for searching, licensing, purchasing and downloading digital content; downloadable computer software and application software for using artificial intelligence for generating images from text." *See* U.S. Trademark Application Ser. No. 97844441, Filed March 17, 2023.

[29] This likely explains why Kashtanova's originally-granted application to register the claimed copyright in *Zarya of the Dawn* did not segregate and disclaim any machine-generated elements. Rather, the Copyright Office became aware of the AI-generated aspects of the work through Kashtanova's statements on social media regarding her use of Midjourney in the creation of *Zarya of the Dawn.*

[30] *Kashtanova Letter*, p. 12.

[31] *Id.*
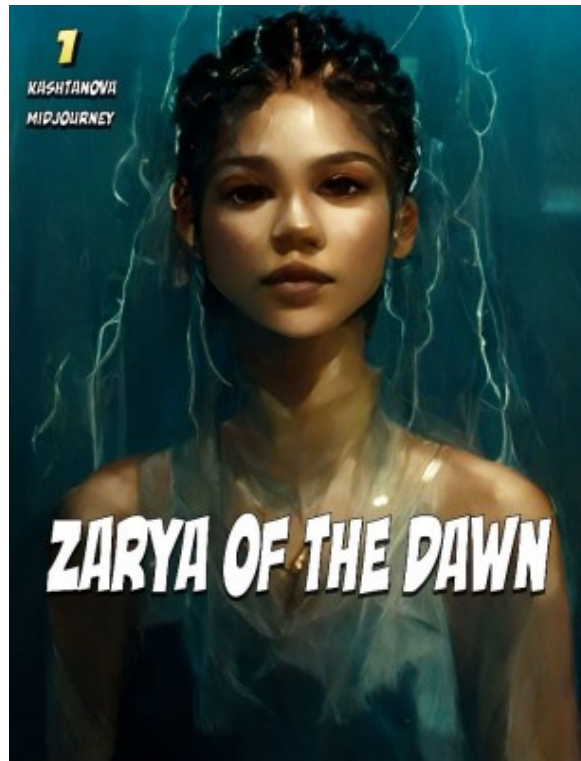
Notably, Kashtanova created neither the programming nor the training materials (databank) upon which Midjourney drew to respond to verbal prompts provided by Kashtanova. Rather, Kashtanova undertook the following actions: (1) she entered a text prompt[32] to Midjourney, which she described as "the core creative input" for the image, providing as an example an image generated in response to the prompt "dark skin hands holding an old photograph;"[33] (2) she then "picked one or more of these output images to further develop;" and (3) she "tweaked or changed the prompt as well as the other inputs provided to Midjourney" to generate new intermediate images, and ultimately what she determined would be the final image."[34]

Despite Kashtanova's participation in the process, the Copyright Office adhered to the view that she contributed no authorship in the images generated by Midjourney. As stated in the Copyright Office's *Kashtanova Letter*:

> Rather than a tool that Ms. Kashtanova controlled and guided to reach her desired
> image, Midjourney generates images in an unpredictable way. Accordingly,

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[32] The prompt was made in conjunction with a designation of the program model selected for use; Midjourney offers a selection of program "models" with different features and output capabilities, such as the "Niji Model" that is described as "a collaboration between Midjourney and Spellbrush used to produce anime and illustrative styles." *See* https://docs.midjourney.com/docs/models (last visited April 9, 2023).

[33] Kashtanova also suggested in her submission that her text prompts are copyrightable because they are similar to poems. However, she did not submit them in the application and is not seeking to register the text prompts themselves, either separately or as part of the Work. Therefore, the Copyright Office did not address the question of copyrightability of the prompts. *See Kashtanova Letter*, p. 9, n. 16.

[34] *Kashtanova Letter*, p. 8.

Midjourney users are not the "authors" for copyright purposes of the images the technology generates. As the Supreme Court has explained, the "author" of a copyrighted work is the one "who has actually formed the picture," the one who acts as "the inventive or master mind." *Burrow-Giles*, 111 U.S. at 61. A person who provides text prompts to Midjourney does not "actually form" the generated images and is not the "master mind" behind them. Instead, . . . Midjourney begins the image generation process with a field of visual "noise," which is refined based on tokens created from user prompts that relate to Midjourney's training database. The information in the prompt may "influence" *[sic]* generated image, but prompt text does not dictate a specific result. . . . Because of the significant distance between what a user may direct Midjourney to create and the visual material Midjourney actually produces, Midjourney users lack sufficient control over generated images to be treated as the "master mind" behind them.[35]

The process as described by Kashtanova also included several changes that she made to two of the images generated by Midjourney. In response, the Copyright Office noted that, "[t]o the extent that Ms. Kashtanova made substantive edits to an intermediate image generated by Midjourney, those edits could provide human authorship and would not be excluded from the new registration certificate."[36] In particular, Kashtanova stated that she intervened and modified the image of the character Zarya to change the lips and mouth depicted in the image generated by Midjourney. The specific modifications to the Zarya character image are shown below.

Detail before Photoshop   Detail after Photoshop

Similarly, Kashtanova asserted that she used the Photoshop program to show aging of the face, smooth gradients, and modify lines and shapes to produce the image of the old woman below.

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[35] *Kashtanova Letter*, p. 9, *citing Burrow-Giles Lithographic Co. v. Sarony*, 111 U.S. 53, 61 (1884) ([T]he "author" of a copyrighted work is the one "who has actually formed the picture," the one who acts as "the inventive or master mind.")

[36] *Kashtanova Letter*, p. 12.

However, the Copyright Office opined that the changes to Zarya's mouth, particularly her upper lip, are too minor and imperceptible to supply the necessary creativity for copyright protection.[37] Moreover, with regard to the image of the old woman, the Copyright Office stated that Kashtanova's description of her changes was insufficient for the Office to determine what expression in the image was contributed through her use of Photoshop as opposed to being generated by Midjourney. Therefore, rather than relying on Kashtanova's statements and judgments, the Copyright Office placed the burden on Kashtanova to show with specificity the nature and extent of her alleged changes to the underlying image(s).

While Kashtanova's Application could be viewed as raising new copyright issues, similar issues have "lurked beneath the surface" or were passed over in recognizing the copyrightable status of, for example, artist Andy Warhol's film, *Empire*. In creating *Empire*, Warhol directed the placement of a film camera, set its speed of recording, and then simply "let the film roll" for a predetermined interval of time to capture external conditions over which he had no control. [38] The result, an extended film of the static Empire State Building could have been influenced by cloud cover, rain, flying animals or insects, natural disasters, or other external factors not under Warhol's control, but the film is recognized by the Copyright Office as a cultural landmark. In 2004 *Empire* was placed on the U.S. Library of Congress National Film Registry of culturally significant American movies,[39] and is described in the following terms: "[C]reated by pioneering pop artist Andy Warhol [*Empire*] consists of a single stationary shot of the Empire State Building filmed from 8:06 p.m. to 2:42 a.m., July 25-26, 1964 . . . Controversial since its release, Empire redefines concepts of perception, action and cinematic time."[40] Therefore, at least in theory, Warhol's contribution arguably could be viewed as exceeding Kashtanova's

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[37] *Kashtanova Letter*, p. 11.

[38] *See, e.g.,* Phil Coldiron, *Film/Art – Manhattan Style: Andy Warhol's Empire*, *cinemascope*, https://cinema-scope.com/columns/film-art-manhattan-style-andy-warhols-empire/ (last visited April 7, 2023).

[39] *See, e.g., Andy Warhol's Film 'Empire' Turns 50*, Mark Byrnes, July 24, 2014, https://www.bloomberg.com/news/articles/2014-07-24/andy-warhol-s-film-empire-turns-50 (last visited April 7, 2023); *see also* https://www.loc.gov/static/programs/national-film-preservation-board/documents/Registry-Titles-alphabetically.pdf for the entire list.

creation of the verbal prompts for engagement of Midjourney and her selection and modification of the Midjourney "responsive images" that Kashtanova chose to use in the final work. Similar issues are at least hovering beneath the surface in, *e.g.,* the cut-up writing techniques of U.S. author William Burroughs[41] and the "randomly-generated" visual works created by British artist, Brian Eno.[42] However, it took the explosive commercial aspects and potential of AI to force some of these issues into the immediate foreground.

Notably, although the Copyright Office acknowledged Kashtanova's contention that she expended significant amounts of time and effort working with Midjourney, this did not affect the result. Rather, the Copyright Office reiterated its position that, "[t]he Office 'will not consider the amount of time, effort, or expense required to create the work" because they "have no bearing on whether a work possesses the minimum creative spark required by the Copyright Act and the Constitution.'"[43] This position reflects the rejection of the previously-embraced "sweat of the brow" basis for copyright protection; a rejection articulated and compelled by the U.S. Supreme Court in the landmark opinion, *Feist Publ'ns, Inc. v. Rural Tel. Serv. Co.[44]* Notably, with regard to the proper subjects of copyright protection, and potentially the legitimacy of the "sweat of the brow" basis for copyright protection, the original U.S. Copyright Statute of 1790 recognized three categories of qualifying works: books, maps, and charts.[45] Over time, the law evolved or was clarified to note that authorship requires a "creative spark" to be evident in the work itself.[46] Notably, this approach might have surprised the framers of the original U.S. copyright statue[47] who thought to include maps and charts as core qualifying subject matter of copyright protection – the point being that the practical value of those works and their promotion of knowledge dissemination and innovation increased as the accuracy of those works increased, *i.e.,* at least arguably, the less human "originality" in the content, the better. Nonetheless, as properly noted in the *Kashtanova Letter*, current U.S. copyright law has rejected the earlier "sweat of the brow" basis for copyright protection and, even though thousands of hours of data gathering and substantial resources may be expended to create the content, the result will not be

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[40] *See* U.S. Library of Congress, *Brief Descriptions and Expanded Essays of National Film Registry Titles*, https://www.loc.gov/programs/national-film-preservation-board/film-registry/descriptions-and-essays/ (last visited April 7, 2023).

[41] *See, e.g., William Burroughs, The Cut Up Method*, from Leroi Jones, ed., *The Moderns: An Anthology of New Writing in America* (NY: Corinth Books, 1963), https://www.writing.upenn.edu/~afilreis/88v/burroughs-cutup.html (last visited April 7, 2013).

[42] *See* Michael Calore, *Interview: Brian Eno*, Wired News, July 2, 2007, https://www.wired.com/2007/07/interview-brian-eno-on-full-transcript/ (last visited April 7, 2023).

[43] *Kashtanova Letter*, p. 10, *citing* U.S. COPYRIGHT OFFICE, COMPENDIUM OF U.S. COPYRIGHT OFFICE PRACTICES § 310.7 (3d ed. 2021).

[44] 499 U.S. 340, 345 (1991).

[45] Copyright Act of 1790, 1 Statutes At Large, 124, https://www.copyright.gov/history/1790act.pdf (last visited April 3, 2023). *see also,* https://www.copyright.gov/timeline/timeline_18th_century.html (last visited April 3, 2023).

[46] *Feist Publications, Inc. v. Rural Tel. Serv. Co.,* 499 U.S. 340 (1991).

[47] The first federal copyright statute, passed by the second session of the First Congress, was signed into law by President George Washington on May 31, 1790, predating ratification of the First Amendment and Bill of Rights. https://www.mtsu.edu/first-amendment/article/1030/copyright-act-of-1790 (last visited April 3, 2023).

eligible for copyright protection unless that creative "spark" is evident in the resulting work itself.

Although the Copyright Office's positions in the *Thaler* and the *Kashtanova* matters are relatively straightforward, on March 16, 2023 the Copyright Office announced an initiative to "examine the copyright law and policy issues raised by AI technology, including the scope of copyright in works generated using AI tools and the use of copyrighted materials in AI training."[48] In addition, also on March 16, 2023, the Copyright Office issued *Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence*.[49] The Guidance statement reiterates a number of the conclusions in the *Thaler* and *Kashtanova* matters, but also contains instructions on how applicants for copyright registration (or owners of already-issued registrations) should comply with the requirement that the presence of AI-generated content be properly described and, potentially, disclaimed, in the original or corrected application.[50]

B. The Courts

Notably, prior to the Copyright Office's treatment of the *Thaler* and the *Kashtanova* matters, U.S. courts were already trending toward a nuanced case-by-case technological analysis with regard to works created with the assistance of computer technology. In doing so, they confronted issues that are the same as, or at least relevant to, issues that focus specifically on AI. Some selected opinions and their ramifications are discussed below.

In *Torah Soft, Ltd. v. Drosin*, the holder of the copyright on computer software directed to identifying coded messages in the Hebrew Bible accused a user of the software of infringing the owner's copyright.[51] The basis for the claim, however, was <u>not</u> the use of the program or associated database, but the copying and publication of print-outs produced through the alleged infringer's use of the copyrighted software. In essence, the owner of copyright in the software argued that the software's copyright extended to printouts created through use of the program. In defense, Drosin, the alleged infringer, argued that: (1) the printouts are not substantially similar to the software or the database; (2) any similarity concerns only non-protectable elements of the software and database; and (3) the printouts are a fair use of the software and database. Notably, the system responded to the user's input of prompts, and this is similar to the process described in the Copyright Office's *Kashtanova Letter* discussed above. In the *Torah Soft* case, the Court described the operation of the Torah Soft system as follows:

> Spielberg [creator of the Torah Soft software] created the Software which, in response to an end-user's input of a particular term, sifts through the Database, reorganizes it according to its algorithm, and then creates a matrix that displays that search term. Although the matrixes do not appear either in the Software or the

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[48] *See* https://www.copyright.gov/newsnet/2023/1004.html (last visited April 4, 2023).

[49] Federal Register / Vol. 88, No. 51 / Thursday, March 16, 2023 / Rules and Regulations, pp. 16190-16194.

[50] *Id.* at 16193-94.

[51] 136 F.Supp. 2d 276 (S.D.N.Y. 2001).

Database, they are "fixed" insofar as the output is repeatable whenever the input is identical. That is to say, each time an end-user inputs the phrase "Yitzhak Rabin," the Software will produce the same matrix. . . . This "repetitive sequence" fixes the matrixes in the Software and the Database.[52]

The system's predictable and repeatable response to the user's prompt demonstrated, in the court's view, that the printouts were not the user's creation. In addition, the court noted that the user's inputs, which consisted of a single word or phrase, would fail to meet the minimum threshold of originality required under copyright law. The key, however, was that the end-user's role in creating the matrix generated in response to the prompts was "marginal." As explained by the *Torah Soft* court:

> Creating a matrix is unlike the creative process used in many computer art programs, which permit an end-user to create an original work of art in an electronic medium. It is fair to say that users of such programs often supply the lion's share of the creativity to create the screen display. By contrast, an end-user of the Software merely inputs a word or phrase which the Software searches for in the Database. Thus, the Software does the lion's share of the work.[53]

The case, however, did not end there. The court noted that the Hebrew Bible that constituted the "backbone" of the system's database is in the public domain and not protectable. Moreover, in the court's view, the changes made to the database by the system's creator were dictated by functional requirements and did not reflect originality. Similarly, the court found that the features of the software for which copyright was claimed were commonplace or stock features of Bible code computer software or subject to copyright law's merger doctrine.[54] The court's final determination, on summary judgement, was:

> [N]one of the features of the Database or the Software are sufficiently original to merit protection. Plaintiff has failed to satisfy its burden of proving that the Software's outputs of Bible code finds, as displayed in the matrixes, contain protectable expression.[55]

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[52] *Id.* at 283.

[53] *Id.*

[54] The Second Circuit has explained the "merger" doctrine, first articulated in *Baker v. Selden,* 101 U.S. 99, 11 Otto 99, 25 L.Ed. 841 (1879), as follows: "The fundamental copyright principle that only the expression of an idea and not the idea itself is protectable has produced a corollary maxim that even expression is not protected in those instances where there is only one or so few ways of expressing an idea that protection of the expression would effectively accord protection to the idea itself." *Hart v. Dan Chase Taxidermy Supply Co.,* 86 F.3d 320, 322 (2d Cir.1996); *Torah Soft,* 136 F.Supp.2d at 291.

[55] 136 F.Supp.2d at 292.

In *Design Data Corp. v. Unigate Enterprises, Inc.,* Design Data Corp. ("Design Data") brought an action against Unigate Enterprises, Inc. ("UE"), alleging that UE infringed the U.S. copyright on Design Data's SDS/2 computer aided design ("CAD") program by downloading an unauthorized copy of the program and importing and distributing within the U.S. program output generated by a Chinese contractor using an unauthorized copy of the program.[56] The court determined that a material issue of fact precluded summary judgment as to whether an unauthorized copy of the SDS/2 copy was actually used in the creation of the accused printouts. However, because there was no dispute that Design Data owns the SDS/2 copyright, UE's liability for importing and distributing SDS/2-generated images and files depended on whether the SDS/2 copyright extends to the program's output. The court described the low court's approach as follows:

> The district court, relying on an unpublished district court decision, rejected Design Data's argument that the SDS/2 copyright could extend to the program's output. *See Design Data Corp. v Unigate Enters. Inc., 63 F.Supp3d 1062, 1068 (N.D. Cal. 2014)* (citing *Atari Games Corp. v. Nintendo of Am., Inc.*, No. C 88–4805 FMS, 1993 WL 214886, 1993 U.S. Dist. LEXIS 8183 (N.D. Cal. Apr. 15, 1993)). Other authorities, however, suggest that the copyright protection afforded a computer program may extend to the program's output if the program "does the lion's share of the work" in creating the output and the user's role is so "marginal" that the output reflects the program's contents. 4 Nimmer on Copyright § 13.03[F] (quoting *Torah Soft Ltd. v. Drosnin*, 136 F.Supp.2d 276, 283 (S.D.N.Y. 2001)).[57]

Design Data failed in its attempt to extend its software copyright to the print-outs because, in the court's view, Design Data failed to "present evidence establishing that SDS/2 "does the lion's share of the work" in creating the steel detailing files or that the user's input is "marginal."[58]

As indicated by the case developments, copyright protection for computer-generated output based on the copyright in the software is clearly an issue that will figure prominently in future discussions of rights in content created through use of AI. Notably, ownership of copyright in the AI software, or integration of open source programming into the system, can affect (on a case-by-case basis) whether the owner can, via contract, seek to require that title in creations made through use of the system revert back to the owner. In this regard, access-licensing techniques might be used to augment, or to fill in a void in, copyright law's application to AI systems and their products. For example, software-as-a-service sites might, through their Terms of Use, require a grant-back of a license, or even a transfer of rights, to content created through use of the software. This approach is, however, not without risk of a potential holding of copyright

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[56] 847 F.3d 1169, 1171 (9th Cir. 2017).

[57] *Id.* at 1173.

[58] The court also denied Data Design's motion to file a second amended complaint because Design Data only moved for leave to amend after the court-ordered discovery cutoff date and three days before the hearing on UE's motion for summary judgment. *Id.*

misuse if the facts of the particular situation indicate an inappropriate attempt to extend the scope of the software's copyright.[59]

In *Rearden, LLC v. The Walt Disney Co.,* the software at issue – the MOVA Contour Reality Capture Program ("MOVA") – is an extremely precise motion capture and processing program that allows, *e.g.,* the retargeting of an actor's face onto another real or fictional face.[60] The defendants allegedly used the services of a vendor who used the MOVA technology without authorization to create effects in motion pictures such as *Beauty and the Beast, Deadpool, The Fantastic Four*, and *Terminator: Genisys.* According to Rearden, the owner of proprietary rights in MOVA: (1) the MOVA program performed substantially all the operations in creating the output in defendants' accused works; and (2) this level of "authorship" justifies extension of MOVA's program copyright to the output created through use of the program. Rearden also claimed that the computer-generated characters in defendants' films incorporate, and are therefore derived from, MOVA's outputs.

An example of an image created through use of MOVA technology and displayed on Reardon's website is shown below[61]:

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[59] *See, e.g., Alcatel USA Inc. v. DGI Technologies*, 166 F.3d 772 (5th Cir. 1999)(improper extension of software copyright to control of microprocessor cards); *Lasercomb America, Inc. v. Reynolds*, 911 F.2d 970, 979 (4th Cir. 1990)(attempt to extend software copyright, through license terms, beyond the life of the original copyright and to preclude creation, in that improperly extended term, of non-infringing, competitive programs).

[60] *Rearden LLC v. The Walt Disney Co.,* 293 F.Supp.3d 963 (N.D. Cal. 2018).

[61] *See* http://www.rearden.com/index.php (last visited April 5, 2023).

After weighing the specific facts and the arguments in defendants' motion to dismiss, the *Rearden* court refused (under the facts and allegations presented) to extend the MOVA copyright to the outputs of the program:

> The Court does not find it plausible that the MOVA Contour output is created by the program without any substantial contribution from the actors or directors. Unquestionably, the MOVA program does a significant amount of work to transform the two dimensional information captured on camera into three dimensional Captured Surface and Tracking Mesh outputs. But this cannot be enough, since all computer programs take inputs and turn them into outputs. *See* 17 U.S.C. § 101 ("A 'computer program' is a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result."). Here, Rearden must allege that the MOVA program has done the "lion's share of the work," and in particular "the lion's share of the creativity" in creating the outputs. . . . Rearden has not met this burden.[62]

Therefore, the court dismissed Reardon's claims of infringement, although the dismissal was without prejudice so that Reardon could have an opportunity to bolster its position in an amendment to the complaint.[63]

As discussed above, courts are, at least with regard to determining authorship, looking closely at the specific processes and the resulting works on a case-by-case basis. This approach should be informed by the recognition that the various phases of AI-assisted processes (such as gathering datasets, training, intervention, output generation, editing output, etc.) often involve choices and creative expressions of the individuality of the human beings that are involved in the process.[64] Moreover, there is a concern regarding the potential, inappropriate extension of copyright to cover useful processes, ideas, and content that falls within the restrictions of copyright law's merger doctrine. Therefore, focus on the evidentiary requirements of each case, whether it be in the application process at the Copyright Office or in the development of the record in litigation, is a foremost consideration as the debate and the legal issues continue to permeate the development and application of AI.

Having covered the AI system's output and internal programming, an equally important issue is whether the AI's training material constitutes infringement through unauthorized use of third party copyrighted materials. As described in a Congressional Research Service publication:

> AI systems are "trained" to create literary, visual, and other artistic works by exposing the program to large amounts of data, which may consist of existing works such as text and images from the internet. This training process may involve making digital copies of existing works, carrying a risk of copyright infringement. As the U.S. Patent and Trademark Office has described, this process "will almost by definition involve the reproduction of entire works or

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[62] *Id.* at 970-971. The court dismissed Reardon's copyright claim without prejudice.

[63] *Id.* at 979.

[64] *See, e.g.,* Janelle Shane, *You Look Like A Thing And I Love You*, Little, Brown and Co., 2019, pp. 230-233.

substantial portions thereof." OpenAI, for example, acknowledges that its programs are trained on "large, publicly available datasets that include copyrighted works" and that this process "necessarily involves first making copies of the data to be analyzed." Creating such copies, without express or implied permission from the various copyright owners, may infringe the copyright holders' exclusive right to make reproductions of their work.[65]

The AI training set issue is arguably "beyond" prior fair use indexing scenarios[66] because these new AI training set practices typically use the copied works to create new works that, in some instances, may compete with the original. This has already stirred much academic debate and actual business-to-business controversies that can have immediate and profound effects on how and under what conditions future AI systems will operate and (potentially) thrive. For example, on January 13, 2023, three visual artists filed (as individual and representative plaintiffs) a class action complaint against Stability AI, Ltd. (UK), Stability AI, Inc. (US), Midjourney, Inc. and Deviantart, Inc.[67] The complaint, which was filed in the U.S. District Court for the Northern District of California, alleges, *e.g.,* direct and vicarious copyright infringement through unauthorized use of third party copyrighted images in the AI's systems' training sets as well as unauthorized removal of the ingested works' copyright management information in violation of the Digital Millennium Copyright Act.[68] According to the complaint:

> Stability [AI] downloaded or otherwise acquired copies of billions of copyrighted images without permission to create Stable Diffusion, including Plaintiffs'. . . . When used to produce images from prompts by its users, Stable Diffusion uses the Training Images to produce seemingly new images through a mathematical software process. These "new" images are based entirely on the Training Images and are derivative works of the particular images Stable Diffusion draws from when assembling a given output. Ultimately, it is merely a complex collage tool. . . . These resulting derived images compete in the marketplace with the original images. Until now, when a purchaser seeks a new image "in the style" of a given artist, they must pay to commission or license an original image from that artist. Now, those purchasers can use the artist's works contained in Stable Diffusion along with the artist's name to generate new works in the artist's style without compensating the artist at all.[69]

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[65] Christopher T. Zirpoli, Legislative Attorney, Congressional Research Service, *Generative Artificial Intelligence and Copyright Law*, p. 3 (February 24, 2023). https://crsreports.congress.gov/product/pdf/LSB/LSB10922 (last visited April 7, 2023).

[66] *See The Authors Guild v. Google, Inc.*, 804 F.3d 202 (2nd Cir. 2015), *cert. den'd* 136 S.Ct. 1658 (2016)(Digital copying of entire books to create a searchable database that displayed excerpts of the books is fair use).

[67] *Anderson, McKernan and Ortiz v. Stability AI, Ltd., Stability AI, Inc. Midjourney, Inc. and Deviantart, Inc.,* Complaint, Case 3:23-cv-00201 (N.D. Cal. Jan. 13, 2023).

[68] *See* 17 U.S.C. §§ 1201–1205. Other claims in the Complaint include violation of rights of publicity by allowing input of artist's names to create images that emulate their respective styles, and unfair competition under federal and state law.

[69] Complaint, pars. 2-5, pp. 1-2.

In addition to Stability AI's "Stable Diffusion" AI system, the Plaintiffs also alleged that Midjourney's AI system and DeviantArt's "DreamUp" use the same infringing approach to populating their system's training set. Of course, as noted in the complaint itself, the plaintiffs anticipate that the defendants will likely raise an affirmative fair use defense, among others.[70] Nonetheless, as with the above-noted prior cases dealing with AI and creativity-assisting tools, much of the analysis likely will turn on a case-by-case approach that takes the specific features of the particular system and the resulting content into account. In other words, while the legal principles and algorithms used in the analyses may be relatively straightforward, the "devil is in the details" of the specific system and content under consideration.

C. Infringement In? – Infringement Out? And Other AI-Related Copyright Issues

As discussed with regard to the class action complaint against Stability AI, *et. al.,* the process of "training" an AI system to produce artistic, literary or musical works typically includes loading reference images, text, or audio content into the system. This inputting has been referred to as "ingestion." The AI system then begins to use the input to create new output. If the input includes a work copyrighted by a third party, the issue arises as to whether the act of loading that work into the system infringes third-party copyright at the point of ingestion. If the output produces mere copies or recognizably derivative works (as the term is used in copyright law), there is also a question of infringement on the "backend" of the process. Of course, there are intermediary stages where intervention in the process – such as purposely shaping the data – can cause potential infringements to occur. It is difficult, even with the most ardent efforts, to fully erase all traces of the human touch in an AI process that is directed to producing output that might be recognized as art or cognizable expression.

Regarding potential infringement at ingestion, an Authors Guild representative proposed a compulsory licensing system for AI training references.[71] Perhaps we could look to approaches used in the music industry – chiefly in compulsory performance and recording licenses – for models to ensure that a fee is imposed when third parties' copyrighted images, texts or other materials are fed into an AI engine as training materials.[72] Notably, however, most compulsory licensing systems anticipate that the resulting output will bear a recognizable relationship to the licensed subject matter. In AI training, however, that is not necessarily the case. Unless we are willing to subscribe to a *per se* rule under which input equals infringement, the analysis becomes more complex. For example, while Jean Michel Basquiat's painting *Crown Hotel (Mona Lisa Black Background)* contains visual cites to or evocations of prior works, especially Leonardo da

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[70] *Id.* at par. 44, p. 11.

[71] Statement of Mary Rasenberger, Executive Director, the Authors Guild and Authors Guild Foundation, *Copyright in the Age of Artificial Intelligence* (Co-Sponsored by the United States Copyright Office and the World Intellectual Property Organization, Feb. 5, 2020, https://www.copyright.gov/events/artificial-intelligence/ last visited April 7, 2023); Transcript at pp. 167-168.

[72] *See, e.g.,* 37 CFR §§210.1, 210.11 – 210.21.

Vinci's *Mona Lisa* and Edouard Manet's *Olympia*, the resulting Basquiat painting is very substantially different from the inspiration or "input" pieces. Cast in the AI context, the question would then become whether the training set is best viewed as the socially-beneficial machine equivalent of an artist's memory of sources and inspirations or (in the case of third party copyrighted works) an unauthorized "pirated" library of third party works – the product being output that may, to some degree, compete with the copyrighted works that were ingested by the system. There are alternative views that may turn on the specific facts of a particular case, but the fundamental issue of whether ingestion can, by itself, constitute infringement is critical.

In the publishing industry (at least in its well-established components) AI is disruptive in both a positive and negative sense. For example, AI is now used to generate news reports that simply aggregate and repurpose verbiage on similar situations to generate new reports. Other writers, including novelists and poets are using AI in the manner reminiscent of William Burroughs' "cut up" techniques or Brian Eno's generative techniques to create interesting and inspiring insights into possible textual or image formations that would not have otherwise occurred to the "author."[73] Also, now that individual authors have heightened independent access to Internet publishing and marketing channels, the opportunity for unauthorized literary text collaging arises. An extreme example of this is the practice of stitching together passages from a number of successful novels – with or without substantial new content – to create "new" and competitive works.[74] This is a concern under established copyright principles, but the question intensifies in the AI context as the ability to "scrape" sources and distribute the results is heightened. The question, again, is whether the infringement analysis should begin at the front end of the process (the training input), the backend of the process (the resulting text), or both.

If we choose to locate a point of infringement analysis at the front end of the system, the question arises as to whether we are abiding by the underlying purpose of the copyright system to promote progress. There is, at least, an administrative convenience factor in the "input equals infringement" approach. It also opens up potential new income streams for the creators whose works are used as inputs. However, if the resulting work is not a derivative work or is a fair use or *de minimis* use under established copyright law, are we going too far?

In general, we can expect AI system licensors and end-users to bristle at the suggestion that they need a license to gather and process third party works beyond recognition or in an arguably *de minimis* or fair use manner. Some may point to *Authors Guild v. Google, Inc.,* a case in which the court held that Google's digitization of entire books to facilitate indexing and third party searches was a transformative fair use[75] – although application of this case to an AI process that

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[73] For a good description and some excellent examples of AI-assisted literary techniques, s*ee* Statement of Jason Boog, West Coast Correspondent for Publishers Weekly, *Copyright in the Age of Artificial Intelligence* (Co-Sponsored by the United States Copyright Office and the World Intellectual Property Organization, Feb. 5, 2020, https://www.copyright.gov/events/artificial-intelligence/ (last visited April 7, 2023); Transcript at pp. 149-157.

[74] *See* Statement of Mary Rasenberger, Executive Director, the Authors Guild and Authors Guild Foundation, *Copyright in the Age of Artificial Intelligence* (Co-Sponsored by the United States Copyright Office and the World Intellectual Property Organization, Feb. 5, 2020, https://www.copyright.gov/events/artificial-intelligence/ (last visited April 7, 2023); Transcript at pp.164-166.

[75] 804 F.3d 202 (2nd Cir. 2015), *cert. den'd* 136 S.Ct. 1658 (2016); *see also, Authors Guild, Inc. v. Hathitrust,* 755 F.3d 87 (2nd Cir. 2014).

is intended to create separate stand-alone (perhaps competitive) works instead of an indexing system is not a perfect fit. It is notable, however, that precedent from the graphic arts (as opposed to music sampling) has moved toward a more liberal fair use approach where the end result is transformative.[76]

Perhaps someday we will see an AI-generated controversy that is akin to the unconscious copying found in *Bright Tunes Music v. Harrisongs Music*[77] if, without the end user's knowledge, a system's ingested materials are themselves infringements of third party copyrights – but the specific facts of each case will need to be examined.[78] In any case, where an intentional appropriation of a specific artist's recognizably unique style is alleged, issues will arise as to whether the appropriation of a third-party's distinctive style goes far enough to make the resulting work an unauthorized derivative work.[79] On the other hand, while stylistic similarities can have some evidentiary value in infringement analyses,[80] artistic styles *per se* are generally not copyrightable.[81] Artists who strive to create in imitative styles, are not necessarily liable for copyright infringement, especially if fair use factors favor the defendant and full disclosure has been made. (Of course, imitation of style, when used for art forgery and fraud gives rise to situations in which organizations, such as the Federal Bureau of Investigation and Interpol, become the works' harshest critics.[82]) For an easy (perhaps temporary) approach to the issue of

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[76] *See e.g., Cariou v. Prince*, 714 F.3d 694 (2nd Cir. 2013), *cert. den'd* 134 S.Ct. 618 (2013); *Seltzer v. Green Day, Inc.,* 725 F.3d 1170 (9th Cir. 2013); *see also*, Rinkerman, *Sampling Unleashed? Migrating Visual Art Fair Use Principles Into The Music Space*, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2540345 (2014).

[77] 420 F.Supp. 177 (S.D.N.Y. 1976), aff'd *ABKCO Music, Inc. v. Harrisongs Music, Ltd*. 722 F.2d 988 (2nd Cir. 1983)(Modifying Order).

[78] The "domino effect" of serial copyright infringement claims based on an accused work that includes a derivative work that is, in turn, based on a separately owned original work, can be seen, for example, in *Russell v. Price,* 612 F.2d 1123 (9th Cir. 1980), *cert den'd* 100 S.Ct. 2919 (1980) (infringement of copyright to play upon which film was based even though the film fell into the public domain); *see also,* Anastasia Tsioulcas, *Not Bitter, Just Sweet: The Rolling Stones Give Royalties To The Verve*, May 23, 2019, https://www.npr.org/2019/05/23/726227555/not-bitter-just-sweet-the-rolling-stones-give-royalties-to-the-verve (last visited April 10, 2023) for a description of how the rock band The Verve was subjected to claims based on an orchestral arrangement of the Rolling Stones' song *The Last Time*, and also on the Rolling Stones song on which the arrangement was (allegedly) based. For those interested in the issue of whether yet another claim may be lurking somewhere "under the radar," a comparison of the Rolling Stones' *The Last Time* with the Staple Singers' earlier 1955 recording of an arrangement of a gospel track titled *This May Be The Last Time* can be interesting. *See, e.g.,* Mike Masnick, *A True Story Of "Copyright Piracy': Why The Verve Will Only Start Getting Royalties Now For Bittersweet Symphony*, techdirt, May 28, 2019, https://www.techdirt.com/2019/05/28/true-story-copyright-piracy-why-verve-will-only-start-getting-royalties-now-bittersweet-symphony/ (last visited April 10, 2013).

[79] *See, e.g., Dr. Seuss Enterprises, L.P. v. Penguin Books USA, Inc.*, 924 F.Supp. 1559 (S.D. Cal. 1996); *aff'd* 109 F.3d 1394 (9th 1997), *cert. dismissed*, 524 U.S. 1146 (1997).

[80] *See, e.g., Hughes (as Executor of the Estate of Andy Warhol) v. Design Look, Inc.,* 693 F.Supp. 1500 (S.D.N.Y. 1988); *Steinberg v. Columbia Pictures Industries, Inc.,* 663 F.Supp. 706 (S.D.N.Y. 1987).

[81] *Id., see also, Dave Grossman Designs, Inc. v. Bortin*, 347 F.Supp. 1150, 156-157 (N.D. Ill. 1972)("Picasso may be entitled to a copyright on his portrait of three women painted in his Cubist motif. Any artist, however, may paint a picture of any subject in the Cubist motif, including a portrait of three women, and not violate Picasso's copyright so long as the second artist does not *substantially copy* Picasso's specific expression of his idea.")

[82] *See, e.g., Ken Perenyi, Caveat Emptor: The Secret Life of an American Art Forger*, Pegasus Books, 2012; *see also,* https://www.kenperenyiart.com/paintings (last visited April 7, 2023).

"style appropriation" there may be instances in which we move into areas of the law[83] and require disclaimers so the public is informed that a work is not created by or associated with a particular artist.[84] This would generally avoid a likelihood of confusion. In a distantly related context, at least one commentator has noted that we may be seeing certification marks indicating that no AI was used in the production of a particular piece of art - just as the rock band Queen used to note that no synthesizers were used in particular recordings [85] and rock icon Iggy Pop noted that "[t]here are no synthesizers on this record" on the rear panel of the sleeve of his *Zombie Birdhouse* album.[86]

Can a system designer or user actually implement apparently neutral processes that nonetheless are biased toward creating works that look generally derivative of Andy Warhol's works? Yes, and as previously discussed, the predictive irony of Warhol's statement, "I want to be a machine" comes to mind."[87] Although, and as discussed above, artistic styles are not generally accorded copyright protection, courts may need to develop new perspectives on the social and commercial utility of empowering (or tolerating) machines that are simply high-powered "imitation machines" - especially when the machine's output affects the livelihood of a living artist who first developed and is associated with the style. We may need to look to unfair competition law and other legal bases for protecting against consumer confusion and unfair gain. Again, disclaimers or prominent and correct attribution might be considered in this context.[88] Also, principles and precedent that are applicable to unfair competition and other areas of the law may step in to fill any gaps.

[83] Notably, in *Dastar Corp. v. Twentieth Century Fox Film Corp.*, 539 U.S. 23 (2003) the Court considered whether § 43(a) of the Lanham Act, 15 U. S. C. § 1125(a), prevents the unaccredited copying of a work that, under copyright law, is in the public domain. The Court went further to state that: "[r]eading the phrase "origin of goods" in the Lanham Act in accordance with the Act's common-law foundations (which were *not* designed to protect originality or creativity), and in light of the copyright and patent laws (which *were*), we conclude that the phrase refers to the producer of the tangible goods that are offered for sale, and not to the author of any idea, concept, or communication embodied in those goods." *Id.* at p. 2050. Nonetheless, there can be alternative bases for vindicating rights against misattribution of artistic works. *See e,g.,* Fishman, Joseph, *The Future of Music Trademarks under Dastar* (April 21, 2020). The Oxford Handbook on Music Law and Policy, referenced at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3581445 (last visited, April 7, 2023).

[84] Artist Charles Lutz, a former assistant to appropriation artist Jeff Koons, took the potential "stigma" of the disclaimer and reversed it – using the Andy Warhol Art Authentication Board's "Denied" stamp on several Lutz' works (in Warhol's style) as an additional (and ironic) selling point. *See,* http://www.charleslutz.com/work/painting/series/denied-warhol-paintings (last visited April 9, 2023).

[85] *See* Statement of David Hughes, Chief Technology Officer, Recording Industry Association of America (RIAA), *Copyright in the Age of Artificial Intelligence* (Co-Sponsored by the United States Copyright Office and the World Intellectual Property Organization, Feb. 5, 2020, https://www.copyright.gov/events/artificial-intelligence/ (last visited April 7, 2023); Transcript at p.215 (comment on Queen); Daniel Markham Collins, Comment on Queen didn't use synthesizers on their 70's albums. The liner notes proclaimed it loudly. *See What Was It They Didn't Like About Synths?*, Quora, https://www.quora.com/Queen-didnt-use-synthesizers-on-their-70s-albums-The-liner-notes-proclaimed-it-loudly-What-was-it-they-didnt-like-about-synths (last visited April 7, 2023).

[86] Animal Records / APE 6000 (Released September 1982).

[87] *See* discussion in Section 1, *infra.*

[88] The "pedigree" of this approach, or a variant of it, can be seen in Albrecht Dürer's attempts in 1506 and 1511 to obtain legal orders against the reproduction of his woodblock prints – the result being that the copyists were ordered to stop including Dürer's unique stamp of origin (an arrangement of his initials) on their copies of his prints. *See* https://madeleinesartblog.wordpress.com/2017/06/10/the-implications-of-the-copying-and-forgery-of-durers-print-works-how-might-he-have-contributed-to-the-modern-concept-of-copyright/ (last visited April 8, 2023).

IV. U.S. Patents and AI

On July 29, 2019 the United States Patent and Trademark Office ("the PTO") received two patent applications listing a "creativity machine" called DABUS (a/k/a "Device and Method for the Autonomous Bootstrapping of Unified Sentience")[89] as the sole inventor with regard to each of the applications. The assignee of the DABUS applications is identified as (the now familiar) Stephen L. Thaler,[90] although Thaler conceded in further filings at the PTO that "[i]t is accepted that an AI system such as DABUS cannot, under current law, own property."[91] The PTO responded by issuing a Notice to File Missing Parts of Nonprovisional Application because, in the PTO's view, Thaler needed to supply an identification of the human being or human beings who invented the claimed subject matter. In essence, the PTO determined in its *Thaler* opinion that the U.S. patent statute does not permit the listing of a non-human entity as an inventor.[92]

In addition to simply interpreting the statute in the PTO's final rejection of Thaler's arguments, the PTO cited a number of cases, including *Univ. of Utah v. Max-Planck-Gesellschaft zur Forderung der Wissenschafen e. V*[93]; *Burroughs Welcome Co. v. Barr Labs, Inc.;*[94] and *Beech Aircraft Corp. v. EDO Corp.*[95] for the proposition that only natural persons can be inventors. According to the PTO, "[w]hile these Federal Circuit decisions are in the context of states and corporations, respectively, the discussion of conception as being a 'formation in the mind of the inventor" and a "mental act" is equally applicable to machines and indicates that conception – the touchstone of inventorship – must be performed by a natural person."[96] Notably, in response to Thaler's argument that the PTO recognized the capabilities of DABUS in patents relating to the DABUS machine, the PTO stated that:

> The granting of a patent under 35 U.S.C. § 151 for an invention that covers a
> machine does not mean that the patent statutes provide for that machine to be

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[89] A description of DABUS can be found in U.S. Patent Publication No. 2015/0379394 A1, published Dec. 31, 2015. According to the abstract: "A system for monitoring an environment may include an input device for monitoring and capturing pattern-based states of a model of the environment. The system may also include a 5 thalamobot embodied in at least a first processor, in which the first processor is in communication with the input device. The thalamobot may include at least one filter for monitoring captured data from the input device and for identifying at least one state change within the captured data. The system may also include at least one critic and/or at least one recognition system."

[90] *See In Re Application of Application No.: 16/524,350*, Decision On Petition For Reconsideration, p. 2, n. 2.

[91] *Id.* at p. 2, n.2.

[92] *Id.* at p. 4.

[93] 734 F.3d 1315 (Fed. Cir. 2013).

[94] 40 F.3d 1223, 1227-28 (Fed. Cir. 1994).

[95] 990 F.2d 1237, 1248 (Fed. Cir. 1993).

[96] *Id.* at p. 5.

listed as an inventor in another patent application – any more than a patent on a camera allows the camera [to] hold a copyright.[97]

Thaler then brought an unsuccessful action under the Administrative Procedures Act in the U.S. District Court for the Eastern District of Virginia in which Thaler sought summary judgment compelling the PTO to reinstate and process the two applications, based on a determination that "a patent application for an AI-generated invention should not be rejected on the basis that no natural person is identified as an inventor" and "a patent application for an AI-generated invention should list AI where the AI has met inventorship criteria."[98] On appeal the U.S. Court of Appeals for the Federal Circuit succinctly phased its perception of the controlling issue:

> This case presents the question of who, or what, can be an inventor. Specifically, we are asked to decide if an artificial intelligence (AI) software system can be listed as the inventor on a patent application. At first, it might seem that resolving this issue would involve an abstract inquiry into the nature of invention or the rights, if any, of AI systems. In fact, however, we do not need to ponder these metaphysical matters. Instead, our task begins – and ends – with consideration of the applicable definition in the relevant statute.[99]

The court then noted that "the Patent Act expressly provides that inventors are 'individuals,'" although the "Act does not define the term 'individual.'"[100] Nonetheless, the Court noted that the Act's use of personal pronouns, *i.e.,* "himself" and "herself" rather than "itself," supports the proposition that the Act uses "individual" in its accepted, general sense to mean a human being. Also, the Court cited Supreme Court precedent that ""[a]s a noun, 'individual' ordinarily means a human being, a person" as well as common dictionary definitions of the term "individual."[101] Notably, in response to Thaler's argument that the use of "whoever" in the statute can include non-human entities, such as corporations that infringe patents, the Court stated: "That non-humans may infringe patents does not tell us anything about whether non-humans may also be inventors of patents."[102]   In short, the Court found that the plain meaning of the Patent Act requires that an inventor must be a human being, not a machine.

The interface of U.S. patent law and AI is not, however, limited to critical issues of inventorship. Recently, for example, there has been concern that the use of an on-line AI tool to assist in the drafting of a patent application can cause an inadvertent publication that triggers the

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[97] *Id.* at p. 7.

[98] *See Thaler v. Hirshfeld*, 558 F.Supp.3d 238 (E.D. Va. 2021); *aff'd, Thaler v. Vidal*, 43 F.4th 1207 (Fed Cir. 2022), *petition for cert.,* No. 22-919 (March 21, 2023).

[99] *Thaler v. Vidal*, 43 F.4th 1207 (Fed. Cir. 2022), *petition for cert. filed,* No. 22-919 (March 21, 2023).

[100] *Id.* at 1211.

[101] *Id.*, citing *Mohamad v. Palestinian Auth.*, 566 U.S. 449 (2012) and, *e.g., Individual, Oxford English Dictionary* (2022) (giving first definition of "individual" as "[a] single human being"); *Individual*, Dictionary.com (last visited April 7, 2023); https://www.dictionary.com/browse/individual (giving "a single human being, as distinguished from a group" as first definition for "individual").

[102] *Id.* at 1212.

"countdown" to the U.S. bar date for filing the application.[103] Depending on the terms of use that apply to the tool, including potential publication of the user's input, there can be a risk of unintended disclosure.

V. Further Considerations

As noted earlier in this discussion, there is a generally perceived, implicit assumption that Article 1, Section 8, Clause 8 of the U.S. Constitution requires that "Authors" and "Inventors" must necessarily be human beings. This view will – as it already has – impact on the issue of whether Congress or the courts are empowered to adapt (some might say "deform") the Constitution's original conception of Authors and Inventors as human beings to now include AI systems and their owners or users. However, a failure to make such an adaptation is not necessarily fatal to federal protection for works that are treated or characterized as being generated wholly or predominantly by AI. When it was determined that trademarks did not constitute writings of authors or inventions or discoveries under Article 1, Section 8, Clause 8 of the Constitution, Congress simply reverted to Article 1, Section 8, Clause 3 – and its "Commerce Clause"[104] – as the basis for enacting federal trademark legislation.[105] With regard to trade secret protection, the Defend Trade Secrets Act, signed into law on May 11, 2016, provides a federal, private, civil cause of action for trade secret misappropriation in which "[a]n owner of a trade secret that is misappropriated may bring a civil action . . . if the trade secret is related to a product or service used in, or intended for use in, interstate or foreign commerce."[106] The basis includes Congress' power under the Commerce Clause. Also, Congress has provided specifically tailored intellectual property laws, such as *The Vessel Hull Design Protection Act*[107] and *The Semiconductor Chip Protection Act*,[108] when it determined that separate and distinct protections were merited by the subject matter. Therefore, federal protection of AI-generated creations need not be captive to presumptions regarding the nature of authorship and inventorship under Article 1, Section 8, Clause 8.

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[103] *See* Ryan Davies, *The Perils And Promise Of ChatGPT As A Patent Drafting Aid*, IP Law 360 (March 17, 2023).

[104] Article 1, Section 8, Clause 3 - the "Commerce Clause" - provides Congress with the power "to regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes." *See* https://constitutioncenter.org/the-constitution/articles/article-i/clauses/752 (last visited April 7, 2023).

[105] In 1879, the U.S. Supreme Court held that the entire 1870 Trademark Act, and its subsequent amendments, were unconstitutional because, in the Court's view, trademarks are neither the writings of authors or inventions or discoveries under Article 1, Section 8, Clause 8 of the Constitution. *Trade-Mark Cases*, 100 U.S. 82 (1879). In response, in 1881 Congress passed a new trademark act predicated on Congress' Commerce Clause powers.

[106] Defend Trade Secrets Act of 2016, S. 1890, 114th Cong. § 2 (2016), codified at 18 U.S.C. § 183.

[107] *See The Vessel Hull Design Protection Act: Overview And Analysis,* Report by United States Copyright Office and United States Patent and Trademark Office (2003), https://www.copyright.gov/reports/vhdpa-report.pdf (last visited April 7, 2023).

[108] *See* Federal Statutory Protection For Mask Works, U.S. Copyright Office, Circular 100, https://www.copyright.gov/circs/circ100.pdf (last visited April 7, 2023).

With regard to state laws, as long as they do not run afoul of preemption principles, states are permitted to fashion laws and causes of action that are not otherwise treated under federal law.[109] For example, when federal copyright law did not adequately or promptly address the rights in recorded audio works, a number of states stepped in to provide protection for this important industry and its products.[110] Also, some states have their own statutes that provide protection for certain types of expressive works that are not covered by the federal copyright statute. For example, in California, artistic works may qualify for protection even if they are not fixed in a tangible medium.[111] Similarly, the states have each fashioned their own approaches to the right of publicity, *i.e.,* the right to prohibit certain unauthorized commercial uses of aspects of one's persona.[112]

Presently, there are a number of studies that seek to identify potential means of protection for AI systems, processes and products.[113] However, in light of the social and commercial importance of the technology, it is clear that a stall in policy development or proper recognition and allocation of proprietary rights likely can be harmful to encouragement of the development of the

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[109] *See, e.g., Zacchini v. Scripps-Howard Broadcasting Co.,* 433 U.S. 562 (1977) (state-fashioned right of publicity is not preempted by federal law).

[110] Although sound recordings were first given federal copyright protection in 1972, sound recordings made before February 15, 1972, remained protected under state law rather than under the federal copyright statute. As a result, there are a variety of legal regimes governing protection of pre-1972 sound recordings in the various states, and the scope of protection and of exceptions and limitations to that protection is unclear. Current law provides that pre-1972 sound recordings may remain protected under state law until February 15, 2067. After that date they will enter the public domain. *See A Study on the Desirability of and Means for Bringing Sound Recordings Fixed Before February 15, 1972, Under Federal Jurisdiction,* https://www.copyright.gov/docs/sound/ (last visited April 7, 2023). However, The Classics Protection and Access Act, Title II of the Orrin G. Hatch–Bob Goodlatte Music Modernization Act, brings pre-1972 sound recordings partially into the federal copyright system. The legislation created a new chapter 14 of the copyright law, title 17 United States Code, which, among other things, extends remedies for copyright infringement to owners of sound recordings fixed before February 15, 1972 ("Pre-1972 Sound Recordings") when the recordings are used without authorization. The new chapter, however, includes several limitations and exceptions to the eligibility for these remedies and related administrative procedures as well as specification of terms of coverage. *See* https://www.copyright.gov/music-modernization/pre1972-soundrecordings/ (last visited April 8, 2023).

[111] *See* 2005 California Civil Code Sections 980-989 CHAPTER 3. PRODUCTS OF THE MIND. For example, Section 980 provides, in part, that "[t] The author of any original work of authorship that is not fixed in any tangible medium of expression has an exclusive ownership in the representation or expression thereof as against all persons except one who originally and independently creates the same or similar work."

[112] There are a number of very different approaches taken by individual states to the rights of publicity. An identification and discussion of several differences can be found at https://rightofpublicity.com/ (last visited April 7, 2023).

[113] For example, the U.S. Copyright Office has launched an initiative to examine the copyright law and policy issues raised by AI technology, including the scope of copyright in works generated using AI tools and the use of copyrighted materials in AI training. After convening public listening sessions in the first half of 2023 to gather information about current technologies and their impact, the Office will publish a notice of inquiry in the *Federal Register*. *See* https://www.copyright.gov/ai/ (last visited April 7, 2023). Similarly, the U.S. Patent & Trademark Office ("USPTO") has announced that it is "pursuing three main avenues of engagement with stakeholders to inform its future efforts on inventorship and promoting AI-enabled innovation: a series of stakeholder engagement sessions; collaboration with academia through scholarly research; and a request for written comments to the questions identified" by the USPTO. *See* https://www.federalregister.gov/documents/2023/02/14/2023-03066/request-for-comments-regarding-artificial-intelligence-and-inventorship (last visited April 7, 2023).

industry and investment in it. However, with regard to the recognition of AI-generated content as equivalent or equal to human-generated content in the eyes of copyright and patent law, this might actually be the wrong (or at least unnecessary) question. In light of other established and evolving legal principles, such as in the area of unfair competition, and the possibility of *sui generis* solutions, the "machine versus human" conundrum might eventually devolve into an interesting but moot distraction. Nonetheless, the current filtering and balancing approaches (*i.e.,* how much, if any, is created by human beings) taken under copyright and patent law appear to be the core and likely enduring models, at least in those areas of intellectual property law.