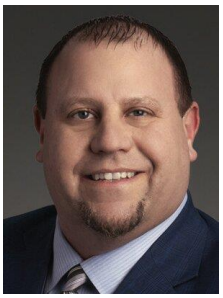
A Look At Future AI Questions For The US Copyright Office

By **Michael Kasdan and Brian Pattengale** (November 10, 2022)



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Artificial intelligence creativity is already affecting copyright law, and challenging the historical frameworks in which authors have secured exclusivity for their work.

A baseline question is whether or not AI or AI-assisted works, such as music, visual arts and literature, are currently protectable by copyright in the U.S.

While the answer is not entirely clear, it appears that the U.S. Copyright Office is currently registering copyrights for AI-assisted works, but refusing them for solely AI-generated works.

The current stance of the U.S. Copyright Office, however, is by no means the last word; it is merely one jumping-off point for exploring the difficult and important raised by this fascinating area of copyright law.

In a previous article, we discussed AI creativity and its impact on what is protectable and not protectable under US copyright law.

This article discusses potential effects on other copyright issues, including the issue of whether AI trained to imitate an artist's style is creating potentially infringing derivative works, as well as provides a discussion of policy issues and outlooks for the future.

Current and Future Issues at the U.S. Copyright Office

At least at the current point in time, AI-assisted works that are paired with apparent human creativity appear to be subject to copyright registration — with a catch. But the dividing line between AI-assisted and AI-generated works is not always a clear one.

For example, on Sept. 15, the U.S. Copyright Office issued what seems to be the first copyright registration for AI-generated art, in this case a graphic novel titled "Zarya of the Dawn."[1]

In this case, the art for the graphic novel was generated — using a popular generative art app called Midjourney — based on text prompts entered by the author but the complete work was not fully AI-generated; the human author wrote the story and made other artistic contributions to the piece.

A month later, the copyright office backtracked, and required that the claimant provide evidence of "substantial human involvement" in the creation of the partially AI generated piece, stating that the copyright is at risk of cancelation until such evidence is provided.[2]

This latest example seems to indicate that for copyright applications involving subject matter that contains portions that are generated by artificial intelligence, the U.S. Copyright Office may require applicants to disclose those portions and be prepared to support their registration by proving some degree of human authorship.

As further discussed below, the distinction between fully AI-generated pieces and AI-assisted pieces is an important one.

It is one that may play a role in considering whether a copyright may be awarded when human creativity or input does not meet some certain, yet currently unknown, threshold apparently already being evaluated by the copyright office.

But where is the line, and can a fully or almost fully AI-generated work be registered for copyright in the U.S.?

The most current and prominent case study that we have relates to the Device for the Autonomous Bootstrapping of Unified Sentience, or DABUS, which was created by Stephen Thaler of Missouri-based Imagination Engines Inc.

Thaler was a party in legal proceedings for both patent and copyright works allegedly created by DABUS without any human inventorship or authorship, respectively. [3]

On the patent side, in August of this year a panel in the U.S. Court of Appeals for the Federal Circuit pronounced that the Patent Act unambiguously requires the naming of a human inventor, rendering DABUS' alleged invention simply unpatentable as submitted.[4]

The Federal Circuit found that resolving the issue did not require "an abstract inquiry into the nature of the invention or the rights, if any, of AI systems." Rather, the decision was based only on the language of the Patent Act, which defines inventors as "individuals," a term that legal precedent has interpreted to refer to a natural person.

The court concluded that "the Patent Act, when considered in its entirety, confirms that 'inventors' must be human beings." Thaler has not been successful in any jurisdiction in his arguments to the contrary, with the exception of South Africa, which granted the first, and currently only, patent to an exclusively AI inventor. [5]

Indeed, the full Federal Circuit recently ruled that it would not take up Thaler's petition for en banc review, therefore ending his bid to name the artificial intelligence machine he created as an inventor on the two patents at issue.[6]

As is common in denials of en banc petitions, the short order did not include any reasoning. Though the current issue appears to be settled, this remains a significant future issue with interesting implications on the patent side, especially as we rely more on sophisticated AI in the business of, for example, drug discovery and other innovation research. [7]

On the copyright side, DABUS is said, by Thaler, to have created a 2D visual work called "A Recent Entrance to Paradise," which was refused registration by the U.S. Copyright Office for not naming a human author. On June 2, Thaler filed a complaint, Thaler v. Perlmutter, in the U.S. District Court for the District of Columbia, after final rejection at the U.S. Copyright Office.[8][9]

The complaint includes several arguments, including that the plain language of the Copyright Act allows protection of AI-generated works, that no case law disallows copyright of AI-generated works, that AI authorship is constitutional, that

> Thaler is entitled to the work under certain rules of property ownership and/or work for hire, and that corporations and other non-human entities have been considered authors for purposes of the Act for over a century.

While it is not our aim to fully evaluate the merits of the arguments here, the question of whether the plain language of the Copyright Act allows for protection of AI-generated works is certainly ripe for debate.

The copyright office, in its Compendium of Regulations,[10] currently interprets the relevant statute — Title 17 of the U.S. Code, Section 102 to include only human authors.

The ultimate answer as to what is possible under the law, however, lies in the interpretation of the Copyright Act and the U.S. Constitution. Article I, Section 8, Clause 8 of the U.S. Constitution grants Congress 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.

Interpretation of authors and inventors is central to the ongoing discussions regarding rights for creative AI, if any.

The Copyright Act provides that

> [c]opyright protection subsists, in accordance with this title, in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device.

Therefore, open questions exist as to the meaning and scope of original works of authorship, and particularly as to the meaning of authorship in U.S. copyright law.

If authors, as recited in the U.S. Constitution, and authorship, as recited in the Copyright Act, are each interpreted to include nonhuman creative entities such as AI, then the answer to the question of AI authorship appears clear.

This interpretation would go hand-in-hand with Thaler's argument that AI authorship is constitutional and permitted under the Copyright Act.

If, on the other hand, the courts deem AI authorship to be unconstitutional, or alternatively hold that Congress did not confer AI authorship under the copyright statute, all AI-created works without a human author may end up in the public domain.

This outcome would arguably be at odds with both public and economic policy and the underlying view of the Framers — that securing exclusive rights is "[t]o promote the progress of useful arts." Putting aside the man vs. machine policy implications, it seems hard to argue that AI creativity is not useful.

By way of example, AI can potentially outcompete human artists as judged by human judges, as was with respect to the "Théâtre D'opéra Spatial" piece discussed in the previous article mentioned earlier.

However, the counterargument, as grounded in the current statute, remains that AI never arises to anything more than a machine or device aiding a human artist and does not account for the amount of contribution by the human compared to the machine or device.

This interpretation also seems problematic, in that it devalues and overlooks that the brunt

of the creative work may be performed by an entity other than the human artist.

A thought experiment crystallizes this issue by further asking the following hypothetical: What if AI — or even a non-AI random phrase generator — generates the prompt that is input into another AI, such as the popular generative AI tool DALL-E, to generate a new visual work?

An input phrase could be useful to generate new art even if it has not been proofread or ever viewed by a human in any way.

These are the types of issues that copyright law will inevitably be forced to address as AI only becomes more sophisticated and prevalent in the arts and literature.

The Question of Whether an AI Created Work Is a Derivative Work

Apart from the question of whether AI or AI-assisted works are protectable by copyright, there is a separate interesting, question of whether AI-created works that are derived from analyzing existing works or styles would require a license from the original author to avoid a claim of copyright infringement.

This may be a particularly important question to address, since many popular generative AI tools already have the capability of copying particular artists' work and styles.

Under the U.S. Copyright Act, a derivative work is any work that, as a whole, represents an original work of authorship but contains additional authorship of new creative material.[11]

For example, a piece of digital art, or a composition, may resemble or draw upon recognizable aspects of a prior copyrighted work, but may adapt it or add new aspects which are distinct from the prior copyrighted work.

The author of such a derivative work infringes any prior copyrighted work if used without permission. Of course, public domain material may be incorporated into new works without permission.

There are also complex issues that must be sorted out as to when the new work "transforms" the old work and would qualify as fair use. The question of when a piece of art is a derivative work and when it is a transformative fair use is at issue before the U.S. Supreme Court in the Andy Warhol Foundation for the Visual Arts Inc. v. Goldsmith case.

At issue there is whether an Andy Warhol illustration of the rock star Prince is an infringement or a transformative fair use, when it was based on a photograph of Prince taken by rock and roll photographer Lynn Goldsmith.[12]

This aspect of copyright law raises a particular challenge for AI-based creative entities:

> What makes the new breed of A.I. tools different, some critics believe, is not just that they're capable of producing beautiful works of art with minimal effort. It's how they work. Apps like DALL-E 2 and Midjourney are built by scraping millions of images from the open web, then teaching algorithms to recognize patterns and relationships in those images and generate new ones in the same style. That means that artists who upload their works to the internet may be unwittingly helping to train their algorithmic competitors. [13]

Because AI utilizes expansive sets of training data in order to produce a work product, there is a risk that the AI-produced work could be considered to be an infringing derivative work if the training data included any copyrighted material.

In infringement proceedings, this would be a question for the finder of fact as to whether or not the work, as a whole, represents the original work, or copyrighted material, and when and whether fair use applies.

Delving a bit deeper into the underlying principles of AI is instructive toward this point. At a very high level, AI operates using neural networks, which are artificial representations of neurons, to mimic or approximate human thought.

The networks generally make connections and correlations between large sets of input data and produce outputs based upon those correlations.

Their structure, i.e., the portions in-between the input and output, is dynamic and adapts based upon a process called training, where the AI learns how to interpret input training data with active oversight or validation.

Depending upon the complexity of the output, the size of the input training data set, and many other factors, the training can be an intensive process to produce an eventually refined AI such as DALL-E.

Thus, all AI-produced work products are algorithmically derivative in some sense by virtue of AI operating principles. In the context of visual arts, the final product could potentially be a derivative work if an original work was included in the training data.

If the training data set is large enough, there could arguably be a dilution effect — in this case it is unlikely that the AI-produced work product would, as a whole, represent any copyrighted original work in the training set.

However, in instances where the AI work product does potentially, as a whole, represent any copyrighted original work, one might only need to look to the training data to conclusively prove infringement.

On the flip side, assuming absolutely no human input, wouldn't a creative product by AI utilizing only public domain training data be conclusively noninfringing as to any coincidentally similar works? Since copyright infringement requires copying, there could seemingly be no infringement if only public domain works are included in the training data.

Another difficult question could be whether or not copying an artist's style rather than the artist's works could constitute copyright infringement in the world of AI. If DALL-E is told to create art in the style of Salvador Dalí, would hypothetical copyright infringement exist where the AI-produced product does not directly resemble any of Dalí's works, but closely or impeccably copies the artist's style based upon its training data?

This is not a theoretical question. AI has already been trained in the style of Rembrandt by digesting and analyzing the data corresponding to all of the master's paintings and used to create new so-called Rembrandts — painted by an AI aptly named The Next Rembrandt — as well as to repair old ones.[14][15]

While important in its own right to IP holders, there is more at stake here than the copying

of historical figures' iconic styles. Living artists relying upon their creative style — developed over a lifetime of hard work to reach a point of recognition — have already been subjected to their style being copied by AI.[16]

It seems that the algorithmic nature of AI might allow copying of style with a level of surgical precision not possible by a human imitator who would unconsciously impart their own stylings.

Thus, copyright law will likely need to reckon with cases where a work is not copied, but a style is, indeed, copied and not just imitated.

An Unpredictable Future for U.S. Copyright

Assuming there is no constitutional bar to AI authorship — which is not a certainty, but remains an unsettled question — there appear to be the following options for policymakers, ranked by order of likelihood:

1. Do nothing.

Common law, as set forth by the courts, will dictate interpretation of the current statute. If recent case law from the patent law side of the aisle is to be any guide, it is likely that courts will continue to find that AI will not be eligible as the author of a work.

Therefore, any such AI-generated works would be public domain. AI-assisted works, having some degree of human input, may be registerable for copyright, but the courts may need to draw a line to determine a minimum-threshold for human contribution to constitute authorship. Issues such whether a particular generative art is an infringing derivative work will be sorted out by the courts.

2. Amend or pass a new statute.

Congress could specifically include or exclude AI as creative authors, or could state that authors must be human. However, if excluded, and an AI does create an original work to an extent that the human does not feel that they have contributed, it would be fraudulent for the human to claim authorship.

The work would either be public domain, or would be the product of fraud on the copyright office if registered with false authorship information. Statutory changes could also address other complicated issues raised by generative art, such as whether and when training an AI based on an artist's existing work is an infringement.

In considering statutory changes as to whether AI-created works are protectible, it may be instructive to consider how other countries have handled the issue computer-generated works.

In the U.K., for example, a special form of copyright protection is available for original literary, dramatic, musical or artistic works generated solely by a computer or AI.

Such special copyrights in the U.K. enjoy a reduced 50-year term compared to the 70-year term for a work containing some degree of human authorship. The copyright is granted to the person who developed the computer program.[17]

Indian law currently contains a provision from 1994 that the author of a computer-

generated literary, dramatic, musical, or artistic work is the person who causes the work to be created.[18]

New Zealand has taken a similar stance, that the computer-generated work is authored by the person who "makes the necessary arrangements for the creation of the work."[19]

The law in each of India and New Zealand might also, as in the U.K., include programmers or persons who arguably had no creative input.

Most other countries, however, do not have any clear provisions for copyrighting computer-generated works. While it is highly unlikely that there will be a one-size-fits-all approach with respect to international copyright law for AI-generated work products, it will be informative to follow any developments internationally as other nations grapple with how to proceed.

3. Adjust U.S. Copyright Office policy.

With no clear pronouncement yet in place from the courts in the context of modern AI, or if the courts refuse to create precedent for any of the outstanding issues, the U.S. Copyright Office could technically, in its role of administering copyright law, make its own interpretation as to those issues.

Again, at this time, as per current copyright office guidance, AI cannot be a sole author. It would take a policy directive from the top to change this.

4. Wait for somebody to develop HAMILTON-E.

AI-generated statute or AI-assisted statute drafting could potentially take into account the multifaceted and complex issues surrounding AI and intellectual property. (The authors do not actually propose this option).

A quote by Stanford Law professor Mark Lemley rather aptly captures some of the subtleties and complexities of the issues discussed above, particularly when we consider that copyright law is intended to protect the expression of an idea, but not the idea itself:

> If I ask Dall-E to produce a painting of hedgehogs having a tea party on a beach, I have contributed nothing more than an idea. Dall-E generates the art that aligns with that idea. True, individual elements of that art are generated based on Dall-E's database of all existing art, but no more-than-de-minimis element of an existing piece of art is likely to show up in what Dall-E produces. I think looking for a human "author" in that scenario is fruitless. It is an effort to bend reality to match the legal categories we have already created. That doesn't mean we have to declare Dall-E an artist and therefore give it a copyright. But it does mean that no human artist has a legitimate claim to be an author under existing law. We may be fine with that and say that this work has no author and so enters the public domain. Or we may want it to be owned by someone for some reason. But if we make the latter choice, we are changing our definition of authorship.

Future Outlooks and the Road Ahead

Currently, the U.S. Copyright Office does not, as a matter of policy, grant copyrights to works produced solely by AI with no human author. While some degree of human contribution to an otherwise copyrightable work product produced by AI appears to be

sufficient, there is no specific guidance as to how much contribution is required.

Likewise, there is no guidance as to whether or not a copyright registration may be challenged on the basis of lacking human authorship, or whether and when an AI-trained algorithm creates an infringing derivative work when it imitates the style of a particular artist or "learns" based on an existing artistic oeuvre.

In view of this rapidly developing area of technology, commercialization strategies must consider the associated uncertainties in how intellectual property law will deal with the new reality of AI generated creative works.

It is important to confront this issue in the near term because AI that is pushing the margins on these issues is now here and in real form in the marketplace today, and it's a complex issue at the margins.

As a policy matter, it will be important to consider how the law should work here going forward, and to get it right, because this is a significant issue in terms of investment and protection for the art and technology spaces.

We expect further interesting developments in this area, as the law continues to confront new and evolving AI technologies.

The one certainty is that AI creative entities are here to stay and will have more — not less — of a role in creating art, music and literature. The intersection of these issues and how and whether policymakers address them will continue to pose important and complicated questions.

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[1] Edwards, B. "Artist receives first known US copyright registration for latent diffusion AI art" Ars Technica, September 22, 2022, URL: https://arstechnica-com.cdn.ampproject.org/c/s/arstechnica.com/information-technology/2022/09/artist-receives-first-known-us-copyright-registration-for-generative-ai-art/?amp=1.

[2] Graves, F. "U.S. Copyright Office Backtracks on Registration of Partially AI-Generated Work"", IP Watchdog, November 1, 2022, URL: https://ipwatchdog.com/2022/11/01/us-copyright-office-backtracks-registration-partially-ai-generated-work/id=152451/.

[3] Pattengale, B. and Sabatelli, A. "Artificial Intelligence (AI) and Inventorship — Will the next blockbuster drug be denied patent protection?" Wiggin and Dana Publication, August 17, 2022, URL: https://www.wiggin.com/publication/artificial-intelligence-ai-and-inventorship-will-the-next-blockbuster-drug-be-denied-patent-protection/ & Graves, F. "Thaler Pursues Copyright Challenge Over Denial of AI-Generated Work Registration"

IPWatchdog, June 6, 2022, URL: https://www.ipwatchdog.com/2022/06/06/thaler-pursues-copyright-challenge-denial-ai-generated-work-registration/id=149463/.

[4] Id.

[5] Karpan, A. "South Africa Issues World's First Patent with AI Inventor" Law360, July 28, 2021, URL: https://www.law360.com/articles/1407508/.

[6] Lidgett, A. "Full Fed. Circ. Won't Consider Push To Let AI Be Inventor" Law360, October 20, 2022, URL: https://www.law360.com/articles/1541857/.

[7] Pattengale, B. and Sabatelli, A. "Artificial Intelligence (AI) and Inventorship — Will the next blockbuster drug be denied patent protection?" Wiggin and Dana Publication, August 17, 2022, URL: https://www.wiggin.com/publication/artificial-intelligence-ai-and-inventorship-will-the-next-blockbuster-drug-be-denied-patent-protection/ & Graves, F. "Thaler Pursues Copyright Challenge Over Denial of AI-Generated Work Registration" IPWatchdog, June 6, 2022, URL: https://www.ipwatchdog.com/2022/06/06/thaler-pursues-copyright-challenge-denial-ai-generated-work-registration/id=149463/.

[8] Id.

[9] Thaler v. Perlmutter, District Court, D.C., Filed June 2, 2022 ,
URL: https://www.courtlistener.com/docket/63356475/thaler-v-perlmutter/.

[10] The Regulations state: "Section 102(a) of the Copyright Act states that copyright protection extends only to "original works of authorship." Works that have not been fixed in a tangible medium of expression, works that have not been created by a human being, and works that are not eligible for copyright protection in the United States do not satisfy this requirement." Compendium of U.S. Copyright Office Practices, 3rd edition, Ch. 700, S. 707

[11] A "derivative work" is a work based upon one or more preexisting works, such as a translation, musical arrangement, dramatization, fictionalization, motion picture version, sound recording, art reproduction, abridgment, condensation, or any other form in which a work may be recast, transformed, or adapted. A work consisting of editorial revisions, annotations, elaborations, or other modifications which, as a whole, represent an original work of authorship, is a "derivative work". 17 USC § 101.

[12] Szynol, P. "The Andy Warhol Case That Could Wreck American Art" The Atlantic, October 1, 2022, URL: https://www.theatlantic.com/ideas/archive/2022/10/warhol-copyright-fair-use-supreme-court-prince/671599/.

[13] Roose, K. "An A.I.-Generated Picture Won an Art Prize. Artists Aren't Happy" The New York Times, September 2, 2022,
URL: https://www.nytimes.com/2022/09/02/technology/ai-artificial-intelligence-artists.html.

[14] Brinkhof, T. "How to Paint Like Rembrandt, According to Artificial Intelligence" Discover Magazine, August 23, 2021, URL: https://www.discovermagazine.com/technology/how-to-paint-like-rembrandt-according-to-artificial-intelligence.

[15] Mattei, S. "Artificial Intelligence Restores Mutilated Rembrandt Painting 'The Night Watch'" ARTnews, June 23, 2021, URL: https://www.artnews.com/art-news/news/rembrandt-ai-restoration-1234596736/.

[16] Nolan, B. "Artists say AI image generators are copying their style to make thousands of new images — and its completely out of their control" Business Insider, October 17, 2022, URL: https://www.businessinsider.com/ai-image-generators-artists-copying-style-thousands-images-2022-10.

[17] Yaros, O. et al. "UK Government's consultation on artificial intelligence and the interaction with copyright and patents" Mayer Brown, December 1, 2021, URL: https://www.mayerbrown.com/en/perspectives-events/publications/2021/12/uk-governments-consultation-on-artificial-intelligence-and-the-interaction-with-copyright-and-patents.

[18] Verma, A. et al. "Copyright authorship to artificial intelligence: Who owns it?" Lakshmikumaran & Sridharan attorneys, May 17, 2022, URL: https://www.lakshmisri.com/insights/articles/copyright-authorship-to-artificial-intelligence-who-owns-it/.

[19] Jackson, G. "Artificial Authorship in New Zealand: is the law equipped?", James & Wells, October 22, 2019, URL: https://www.jamesandwells.com/intl/artificial-authorship-in-new-zealand-is-the-law-equipped/#:~:text=In%20New%20Zealand%2C%20a%20computer,to%20another%20person%20or%20entity.