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The Future of AI Protection

Paul A. Ragusa and Nick Palmieri*

This article looks at whether (and how) intellectual property protection can apply to the results produced by an artificial intelligence, such as a new technology, a song, or even new data.

While businesses and innovators develop artificial intelligence ("AI") technologies, intellectual property ("IP") protection for these technologies has struggled to keep up in all contexts. The main IP regimes—copyrights and trade secrets—for protecting these assets apply to AI technology in two contexts.

The first context is IP protection of an AI itself, such as providing protection to the code that forms an AI or use of the AI.

The second context, which has been gaining relevance in recent years, is IP protection of the *output* of AI.

This article looks at whether (and how) IP protection can apply to the results produced by an AI, such as a new technology, a song, or even new data.

Patents

In recent years, patent applications directed to AI technologies have grown significantly, reflecting the increased importance that businesses are placing on such inventions.[1] The U.S. Patent and Trademark Office ("USPTO" or "Office") has adapted its procedures in order to adapt to these inventions. While patents related to computer software (a category encompassing AI) can in some circumstances be difficult to obtain, AI inventions can receive patent protection.

On the other hand, patent offices worldwide have just begun to address a separate but related issue: how to treat the *output* of AI, specifically whether these outputs are eligible for patent protection. Thus far, patent offices have not granted patent protection to the output of AI.[2]

Recently, a decision by the USPTO has firmly declared that an AI cannot be listed as the sole inventor on a patent application, which seems to settle the issue until future changes to the law.

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Output

In 2019, without input from its creator, Dr. Stephen Thaler, DABUS produced two designs (one directed to a fractal food container, one directed to a beacon for attracting attention), which Dr. Thaler submitted as patent applications in the United States, the United Kingdom, and the European Patent Office ("EPO"). These applications spurred a flurry of speculation and theorization regarding whether or not AI should be eligible as inventors for patents, and if so, how offices could achieve such goals.[3]

Last year, both the United Kingdom and the EPO refused registration on the grounds that an AI cannot be listed as an inventor under the respective rules of each office;[4] and last April the USPTO finally released its much anticipated decision.[5] Citing to the U.S. Code, the Code of Federal Regulations, the Manual of Patent Examining Procedure, and case law, the Office finally rejected the applications on the basis that "the patent laws require that an inventor be a natural person."

In support, the Office cited to two U.S. Court of Appeals for the Federal Circuit decisions, *University of Utah v. Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.*, where the court held that a *state* could not be an inventor,[6] and *Beech Aircraft Corp. v. EDO Corp.*, where the court held that a corporation could not be an inventor ("only natural persons can be 'inventors'").[7] Given this decision, and the background Federal Circuit decisions, it appears that only *natural* persons are entitled to inventorship, at least until Congress or perhaps the U.S. Supreme Court gets involved.

However, the Federal Circuit in *Bozeman Financial LLC v. Federal Reserve Bank*, questioned whether quasi-governmental entities (for example, Federal Reserve Banks) could be considered "persons" under the America Invents Act ("AIA"), and thus eligible to bring post-issuance proceedings. In its ruling,[8] the court held specifically that "the Banks are 'persons' under the AIA."[9] The decision casts doubt on the USPTO's understanding that the Federal Circuit *requires* a natural person to be an inventor under the AIA.

Regardless, as AI technologies continue to be developed and applied in industries across the world, the products of these technologies appear ineligible for patent protection within the United States, at least until further action by Congress or the courts.

Copyrights

Software has long been eligible for copyright protection within the United States,[10] and so naturally extends to protection of AI software as well. And these AI in turn have begun producing works of their own, works that, if created by a human, would almost certainly qualify for copyright protection.[11] Yet still the question persists of whether or not works created by an AI qualify for copyright protection.

In the United States the answer appears to be "no," though the answer is perhaps not as clear as some may think. Case law and the rules of the U.S. Copyright Office indicate that a human needs to be involved (at least to some degree) in order to fulfill the authorship requirement of copyright law.

AI Software

As mentioned, copyright protection is widely used to protect software, and thus can be relatively easily extended to AI software. That said, AI covers a variety of different sub-technologies,[12] and some AI programs are even being developed that can modify themselves.[13] These intricacies may impact the process of achieving such protection.

As per the U.S. Copyright Office's Circular 61, which outlines the registration requirements for computer programs, an application for copyright must include three things: an application form, a nonrefundable filing fee, and a nonreturnable deposit.[14] This deposit can contain different materials depending on what is being submitted. Generally, source code must be included in the deposit, though the entire source code need not be submitted.[15] However, for each version of a program, a new application (including fee and deposit) should be filed.

When it comes to AI that is capable of evolving on its own, or is changed in response to new training data, a new version may need to be submitted with each change. The Office does allow for registration of derivative computer programs, which requires submission of the new source code or materials involved, though it does still require payment of a new application fee.[16]

Output

Protection of an AI itself is not the only context in which AI interacts with copyright protection. Considering the increasing ability of AI to generate comprehensible works, such as music, pictures, and even poetry,[17] many are looking into ways that would allow copyright protection to extend to those works. However, within the United States, such protection does not appear to be forthcoming.

First, the Copyright Office and courts currently do not recognize AI as authors under the law, therefore, any "works" an AI create cannot now qualify for protection.

Likewise, works made for hire,[18] which do not require an *author*, do not appear to fulfill the requirements for this protection.

As Author

The U.S. Copyright Office has made it clear that to qualify as a work of "authorship," the work "must be created by a human being." The Office even specifies that it will *not* register works "produced by a machine . . . without any creative input or intervention from a human author."[19] This requirement for human authorship was further emphasized by the U.S. Court of Appeals for the Ninth Circuit in the infamous "monkey-selfie case," *Naruto v. Slater*.[20] In that case, the court dismissed a claim of copyright infringement brought on behalf of a macaque monkey, stating that in order for a non-human to have standing under an Act of Congress, Congress must expressly grant standing, otherwise only humans have standing.

With these clear decisions in place, there is little chance of obtaining copyright protection of a work created entirely by an AI. However, one caveat does still exist that may predict future opportunities for protecting works created by an AI. As the current Copyright Compendium makes clear, the Office will not register works created by a machine "without any creative input or intervention from a human author." Further, in the most recent draft Compendium circulated by the Office, this language has been further refined as "the U.S. Copyright Office will refuse to register a claim in a work that is created through the operation of a machine or process *without sufficient human interaction*."[21] In this way, the AI appears to presently be treated more as a tool than as an author.[22]

Work Made for Hire

Under this doctrine, the "author" of the work is not the creator, but rather "the party that hired the individual is considered both the author and the copyright owner of the work."[23] Because this is an automatic determination ("In the case of a work made for hire, the employer or other person for whom the work was prepared is considered the author for purposes of this title"),[24] the authorship eligibility of the creator would seem to be of less importance.

According to the Copyright Act, a work made for hire can arise in two circumstances:

- A work prepared by an employee within the scope of his or her employment; or
- A work specially ordered or commission, if the parties expressly agree in a written instrument signed by them.[25]

In *Community for Creative Non-Violence v. Reid*, the Supreme Court addressed the work made for hire doctrine in the context of a sculpture created by an independent contract, who was *not* considered an employee under the Copyright Act, and thus the sculpture was not considered a work made for hire.[26] There, the Court specified that the language in the Copyright Act should be "understood in light of agency law," in this case, specifically, "common-law agency law."[27] So, rather than requiring a new law passed by Congress, future agency interpretations may expand the applicability of the work for hire doctrine.

Trade Secrets

The wide breadth of protection allowed by trade secret law make it a useful tool for protecting those aspects of an AI that do not fit neatly into other categories of AI protection. For example, algorithms and data, which cannot be covered by copyright or patent protection,[28] make for ideal trade secret candidates.

Of course, trade secrets have their own associated costs and difficulties. For example, in order to obtain trade secret protection companies must invest (and maintain) appropriate privacy infrastructure, which includes not only physical infrastructure, such as servers, computers, and security, but also intangible

infrastructure, such as company policies, properly drafted NDAs, and asset monitoring.

Generally, trade secret protection can apply to "information, including a formula, pattern, compilation, program, device, method, technique, or process that: (i) derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use, and (ii) is the subject of efforts that are reasonable under the circumstances to maintain its secrecy."[29]

AI Software

There are two main aspects of AI technologies that can benefit from trade secret protection, neither of which can benefit from patent or copyright protection: algorithms and data. Algorithms, which comprise the actual steps an AI takes in generating a result, can represent significant investments, refined over long periods of time, and make up a significant portion of an AI's written code.

Where a company has appropriate infrastructure in place, it should be a straightforward process of including such algorithms into this protection regime.

However, the use of data (in particular personal data) may implicate other laws. For example, both the General Data Protection Regulation ("GDPR")[30] and California Consumer Privacy Act ("CCPA")[31] have requirements to either disclose the collection of certain personal data as well as requirements to delete certain personal data upon request. Considering that data is often used either (1) to train AI inventions, or (2) to generate some output for use by the company, either of these requirements by the GDPR and CCPA could be costly.

Output

Given that one key component of trade secret protection is *secrecy*, it is important that where a company ensures that all outputs of an AI are properly accounted for and kept secure where necessary. For example, where an AI is used to generate trends (such as client preferences or geographic metrics) or other information

that will be used internally, a company must be able to capture this data and quickly integrate it into their own privacy infrastructure.

Recent case law related to the Defend Trade Secrets Act ("DTSA") also suggests an additional layer of protection that trade secrets can offer: extraterritoriality. While not an unlimited right to protect trade secrets abroad, cases certainly suggest that some protection is possible. Under the DTSA, misappropriation of trade secrets includes two elements: acquisition of a trade secret *and* disclosure or use thereof.[32]

In *Micron Tech. v. United Microelectronics Corp.*,[33] the U.S. District Court for the Northern District of California had personal jurisdiction over two defendants where only the first element, acquiring a trade secret, occurred within the United States. Despite the fact that the defendants' act of disclosure and use took place in China, the court determined that the DTSA still applied since the trade secrets were acquired within the United States.[34]

On the other hand, in *Luminati Networks Ltd. v. BIScience Inc.*,[35] the U.S. District Court for the Eastern District of Texas refused to treat damages occurring in the United States, without more, as sufficient to state a claim under the DTSA.[36] According to the defendants in that case, the alleged use and acquisition of the trade secrets occurred in Israel, with the only relevant consequence within the United States being damages to the plaintiff.[37]

Notes

* Paul A. Ragusa is a partner in the Intellectual Property section of Baker Botts L.L.P.'s New York office. His practice encompasses high-technology and Hatch-Waxman patent litigation, inter-partes reviews, IP portfolio management, counseling, and licensing. He may be contacted at paul.ragusa@bakerbotts.com. Nick Palmieri is an associate in the Intellectual Property section of the firm's New York office. His practice encompasses high-technology and medical device patent prosecution and litigation. He may be contacted at nick.palmieri@bakerbotts.com.

1. *See* WIPO, WIPO Technology Trends 2019: Artificial Intelligence at 30–37 (2019), https://www.wipo.int/edocs/pubdocs/en/wipo_pub_1055.pdf.

2. Both the United Kingdom and the European Union have recently declared that an AI cannot be an inventor under their respective patent laws, refusing patent applications filed in the name of an AI named DABUS. *See* UKIPO, *Whether the Requirements of Section 7 and 13 Concerning the Naming of Inventor and the Right to Apply for a Patent Have been Satisfied in*

Respect of GB1816909.4 and GB1818161.0, BL O/741/19 (2019); *EPO Publishes Grounds for Its Decision to Refuse Two Patent Applications Naming A Machine as Inventor*, Eur. Pat. Off. (Jan. 28, 2020), https://www.epo.org/news-events/news/2020/20200128.html.

3. For example, the USPTO sought comments regarding whether AI inventions should be patentable. *See* USPTO, *Request for Comments on Patenting Artificial Intelligence Inventions*, 84 Fed. Reg. 44889 (2019).

4. *See supra* note 2.

5. *In re* Application of Application No. 16/524,350, USPTO (Apr. 22, 2020), https://www.uspto.gov/sites/default/files/documents/16524350_22apr2020.pdf.

6. 734 F.3d 1315 (Fed. Cir. 2013).

7. 990 F.2d 1237, 1248 (Fed. Cir. 1993).

8. The court notes that "this decision is limited to the status of the Banks and does not prejudice other entities whose status as 'persons' under the AIA may separately be questioned." *Bozeman Fin. LLC v. Fed. Reserve Bank*, No. 19-1018, slip op. at 5 (Fed. Cir. Apr. 10, 2020).

9. *Id.*

10. U.S. Copyright Office, *Circular 61: Copyright Registration of Computer Programs* (2020), https://www.copyright.gov/circs/circ61.pdf.

11. *See* Andres Guadamuz, *Artificial Intelligence and Copyright*, Wipo Magazine (Oct. 2017), https://www.wipo.int/wipo_magazine/en/2017/05/article_0003.html.

12. *See, e.g.*, Naveen Joshi, *7 Types of Artificial Intelligence*, Forbes (Jun. 19, 2019, 10:54 PM), https://www.forbes.com/sites/cognitiveworld/2019/06/19/7-types-of-artificial-intelligence/#6dc4753a233e.

13. Kim Martineau, *Toward Artificial Intelligence that Learns to Write Code*, MIT: News (Jun. 14, 2019), http://news.mit.edu/2019/toward-artificial-intelligence-that-learns-to-write-code-0614.

14. *See* U.S. Copyright Office, *supra* note 10 at 1.

15. The Compendium of U.S. Copyright Practices § 1509.1(C) (2017), https://www.copyright.gov/comp3/chap1500/ch1500-deposits.pdf.

16. *Id.*

17. *See* Guadamuz, *supra* note 11.

18. U.S. Copyright Office, *Circular 30: Works Made for Hire* (2017), https://www.copyright.gov/circs/circ30.pdf.

19. The Compendium of U.S. Copyright Practices § 313.2 (2017), https://www.copyright.gov/comp3/chap300/ch300-copyrightable-authorship.pdf.

20. 888 F.3d 418 (9th Cir. 2018) (relying on *Cetacean Comm. v. Bush*, 386 F.3d 1169 (9th Cir. 2004)).

21. Public Revised Draft of Compendium of U.S. Copyright Office Practices § 906.8 (2019), https://www.copyright.gov/comp3/draft.html (emphasis added).

22. A court in China has recently used a similar idea to justify granting copyright protection to an article produced by an AI, by saying that the initial programmers who created the AI put forth the initial creative effort at the time of creation of the AI, and though the AI created the article without further input and temporally removed from its creators, the initial creative effort carried over. *Shenzhen Tencent Comp. Sys. Co. v. Shanghai Yingxun Tech. Co.*, 305 Min Chu No. 14010 (Guangdong 2019); summary available at https://www.natlawreview.com/article/shenzhen-court-rules-ai-generated-articles-are-entitled-to-copyright-protection.

23. *See* U.S. Copyright Office, *supra* note 18 at 1.

24. 17 U.S.C. § 201 (2020).

25. 17 U.S.C. § 101 (2010).

26. 490 U.S. 730, 740 (1989).

27. *Id.*

28. *See, e.g.*, *Database and Collections of Information Misappropriation Act of 2003 Before Subcomm. on Courts, the Internet, and Intellectual Property*, 108th Cong. (2003) (statement of David O. Carson, General Counsel, U.S. Copyright Office).

29. Uniform Trade Secrets Act (Unif. Law Comm'n 2018).

30. Regulation (EU) 2016/679, On the Protection of Natural Persons with Regard to the Processing of Personal Data and on the Free Movement of Such Data, and Repealing Directive 95/46/EC (General Data Protection Regulation), 2016 O.J. (L 119) 1.

31. Cal. Civ. Code §§ 1798.100-.192 (West 2018).

32. 18 U.S.C. § 1839(5)(B) (2016).

33. 2019 WL 1959487, No. 17-cv-06932 (N.D. Cal. 2019).

34. *Id.* at *11.

35. 2019 WL 2084426, No. 2:18-CV-00483 (E.D. Tex. 2019).

36. *Id.* at *11.

37. *Id.* at 10. Ultimately, the court found the plaintiffs had at least alleged a valid claim, because they accused the defendants of specific uses of the plaintiff's trade secrets within Texas.