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February 12, 2020

WIPO Secretariat
World Intellectual Property Organization
34, chemin des Colombettes
CH-1211 Geneva 20, Switzerland

via email to: ai2ip@wipo.int

Re: Comments in Response to *Draft Issues Paper on Intellectual Property Policy and Artificial Intelligence*, WIPO/IP/AI/2/GE/20/1 (December 13, 2019)

Dear Colleagues:

As Chair of the Section of Intellectual Property Law of the American Bar Association (the "Section"), I write on behalf of the Section to provide the Section's Comments responding to an invitation at paragraph 3 of *Draft Issues Paper on Intellectual Property Policy and Artificial Intelligence*, WIPO/IP/AI/2/GE/20/1 (December 13, 2019) ("Issues"). These Comments draw from positions reached in response to two sets of requests for comments on Intellectual Property Protection for Artificial Intelligence Innovation, which were promulgated by the US Patent & Trademark Office ("USPTO") at 84 Fed. Reg. 44889 (August 27, 2019) and 84 Fed. Reg. 58141 (October 30, 2019). The views expressed herein are presented on behalf of the Section and have not been approved by the House of Delegates or the Board of Governors of the American Bar Association and, accordingly, should not be construed as representing the positions of the Association.

Since 1894, the ABA-IPL Section has advanced the development and improvement of intellectual property laws and their fair and just administration. As the forum for rich perspectives and balanced insight on the full spectrum of intellectual property law, the Section serves within the ABA as a highly respected voice within the intellectual property profession, before policy makers, and with the public.

The Section appreciates this opportunity to share with the WIPO Secretariat some of its thinking on the issues raised by current and foreseeable applications of artificial intelligence ("AI") technologies relative to intellectual property law and policy.

As explained in further detail below, the Section is of the view that AI is not at a stage of development that it is so "autonomous" (sometimes called "general AI") that it can be considered to "conceive" inventions protected by American patent law or works protected by American copyright law. The use in the Issues of the terms "autonomous" and "data" (under a broad, European data protection regime) were not considered in depth by the Section and are noted as exceptions here.

In its earlier comments to the USPTO,[1] the Section applied the following characterization of "AI," which applies here as well:

"Artificial Intelligence" is comprehended within the computer science study of "intelligent agents" – instrumentalities for responding to their environments to act ("optimally") towards achieving certain goals – distinguished from "natural intelligence" and mostly using digital computer technology.[2]

For responding to the USPTO's August 2019 request for comments regarding patenting of AI, "the Section adopt[ed] a working *understanding* of the term "AI" to refer to technologies that are capable of autonomy, human-like intelligence, and/or human-like learning." That broad understanding was appropriate for the Section's comment on patenting of the many aspects of AI technology and is appropriate for the Section's consideration of trade secret and computer program copyright protection of those technological aspects as part of the Section's response to the USPTO's October 2019 request addressed to non-patent intellectual property protection. Although the Section will use the broad understanding here, the Section is particularly concerned with members of the subset of AI technologies that use and/or generate information that is or should be protected by copyright or new, *sui generis* law.

Among these, rules-based "expert systems" embodying decision-making rules set down or reinforced by human experts have not presented notable intellectual property controversy over decades of deployment under various licensing schemes. More recent artificial neural networks (ANNs), which coarsely simulate human neurons with hard-wired but optimization-adjusted-weighted connections, have been deployed as pairs in "generative adversarial networks" that

[1] American Bar Association Section on Intellectual Property Law, Comments in Response to "Patenting Artificial Intelligence Inventions," *available at* https://www.americanbar.org/content/dam/aba/administrative/intellectual_property_law/advocacy/aba-ipl-response-to-uspto-on-patent-related-issues-regarding-ai-inventions.pdf, and https://www.americanbar.org/content/dam/aba/administrative/intellectual_property_law/advocacy/aba-ipl-comments-to-uspto-on-ai.pdf

[2] E.g., DAVID POOLE ET AL., COMPUTATIONAL INTELLIGENCE: A LOGICAL APPROACH 1-2 (1998) ("artificial" has connotations of simulation; human society may have greater intelligence than an individual).

have generated output not distinguishable from traditional human "expression," but convincingly mimicking the style of selected artists.

However, such selection is made at some point by a human even by setting down rules for selection or deploying (turning on) the AI. Rules for harmonious musical accompaniment are set down either according to formal or informal theories of music or by human approbation. Selection of news feeds or searching the web to automatically generate expositions is directed by a human at some point. We do not yet have an AI that is so autonomous as to develop its own goals in "self-awareness."

The generalized components of an ANN system include input of initial training data (possibly labeled by humans), an ANN for which connection weights are optimized relative to the training data typically by "gradient descent" (analogous to linear regression in multiple dimensions), resulting in a model to which inputs are provided to be recognized or to generate other output that may provide further training. Each of these components may be protected by copyright or trade secret law (or both) if it meets the qualifications of that law.

AI Authorship, Inventorship and IP Ownership. In response to the USPTO's questions, and drawn narrowly, the Section adopted the following resolutions:

> (1) the Section opposes, in principle, recognizing an artificial intelligence as an "author" under US patent law;
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> (2) the Section opposes, in principle, recognizing an artificial intelligence as an assignee, licensee, or other type of party having an ownership or possessory interest to a copyright recognized under Title 35 [of the US Code];
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> (3) the Section opposes, in principle, recognizing an artificial intelligence as an "author" under US copyright law;
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> (4) the Section opposes, in principle, recognizing an artificial intelligence as an assignee, licensee, or other type of party having an ownership or possessory interest to a copyright recognized under Title 17 [of the US Code]; and
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> (5) the Section opposes in principle, a new *sui generis* law to supplement US copyright, patent, trade secrets, data access (*e.g.*, Computer Fraud and Abuse Act, 18 USC § 1030) or contract law to protect artificial intelligence data sets and databases.

The Section's reasoning is provided in context below. Where the Section did not reach consensus, an issue may be explained.

PATENTS

Issue 1: Inventorship and Ownership [Patents]

(i) Should the law permit or require that the AI application be named as the inventor or should it be required that a human being be named as the inventor? In the event that a human inventor is required to be named, should the law give indications of the way in which the human inventor should be determined, or should this decision be left to private arrangements, such as corporate policy, with the possibility of judicial review by appeal in accordance with existing laws concerning disputes over inventorship?

The Section resolved (1) that a human being should always be named as an inventor and (2) that an AI application may not be an inventor. These conclusions are primarily based on the Section's support for U.S. law's "conception" requirement, applied when determining who is an inventor. Conception of an invention occurs when a person formulates "a definite and permanent idea of the complete and operative invention" in their mind. When there are purportedly joint inventors, each person may perform only a part of the effort to produce the invention, but need not make the same type or amount of contribution. No formulation of the conception requirement has contemplated a non-human's contribution.

Where the inventive process involves an AI agent, conception may be attributed to a human who puts in motion and provides any input (including objectives or threshold for patenting) that the AI agent uses to "reduce to practice" an invention, including a person recognizing (discerning) an inventive intermediate or final result of that agency. Determination of such conception (*e.g.*, whether the human's efforts amount to conception or a mere use of software) should continue to be made by fact-finding administratively and judicially under existing law.

To the extent a legal regime has ambiguity as to "the way in which the human inventor should be determined," the legal tests and/or standards should be codified legislatively, promulgated administratively, or otherwise adopted judicially.

Private arrangements may be used to define ownership over inventions, but the question of inventorship should remain a creature of law and off limits to private arrangements. For example, a private arrangement may define ownership over inventions by an employee or independent contractor who uses a proprietary AI agent owned by the employer. This is a prevalent practice and is capable of adequately protecting the rights of all parties, at least for current, foreseeable circumstances.

(ii) The inventorship issue also raises the question of who should be recorded as the owner of a patent involving an AI application. Do specific legal provisions need to be

introduced to govern the ownership of autonomously generated AI inventions, or should ownership follow from inventorship and any relevant private arrangements, such as corporate policy, concerning attribution of inventorship and ownership?

The Section resolved that an AI application may not be an owner. This is primarily because U.S. laws and customs aim to both reward monetary investments but also recognize inventors. These goals are rarely at odds. Private arrangements can clearly define ownership, even though the law requires all inventors be recognized. This approach also adequately protects all parties in the rare instances when co-inventors are either accidentally or intentionally omitted from an application. Like the determination of "conception" by a human, ownership may be made by fact finding administratively and judicially under existing law. This can include the examination of private arrangements.

An AI agent cannot currently hold property as a juridical entity under U.S. law. Section consensus is that there is not yet truly "autonomous" AI for inventorship or ownership purposes. The issue of AI-ownership is therefore premature and moot because no AI technology is known to have the self-determination necessary to exercise legal rights. AI agents will be considered chattel for the foreseeable future and therefore do not have ownership or moral rights.

(iii) Should the law exclude from the availability of patent protection any invention that has been generated autonomously by an AI application? See also Issue 2, below.

Again, Section believes that AI is not nearly "autonomous" for purposes of invention (particularly conception) and ownership, even if highly automated and self-teaching relative to given objectives. A "general AI" of such autonomy as to be guided by the (US) constitutionally-delegated incentives for invention and corporate objectives and responsibilities is nowhere on the horizon.

Issue 2: Patentable Subject Matter and Patentability Guidelines

(i) Should the law exclude from patent eligibility inventions that are autonomously generated by an AI application? See also Issue 1(iii), above.

Again, Section believes that AI is not nearly "autonomous" for purposes of invention (particularly conception) and ownership, even if highly automated and self-teaching relative to given objectives. The selection of such objectives, even using the "Generative Adversarial Networks," the filtering of input, or even the choice of whether a result is presented for patenting, may constitute invention by the human agent.

The Section stresses a distinction between the questions of patent-eligibility and inventorship. Although factual inquiries and various considerations may intersect, these should remain distinct legal concepts. For example, an AI agent could potentially

generate patent-eligible inventive subject matter, but a patent should not issue for said subject matter because no human would qualify as an inventor.

(ii) Should specific provisions be introduced for inventions assisted by AI or should such inventions be treated in the same way as other computer-assisted inventions?

No. The Section generally believes that patent law should avoid introducing legal frameworks that are idiosyncratic to a particular technical art, including AI. Second, as a practical matter, AI "learning" (*e.g.,* optimization), including in design, is not different in kind or effect, from other forms of automation and optimization, including other computer-assisted inventions.

(iii) Do amendments need to be introduced in patent examination guidelines for AI-assisted inventions? If so, please identify which parts or provisions of patent examination guidelines need to be reviewed.

No. See the Section's response to the USPTO request for comments on this issue.

Issue 3: Inventive Step or Non-Obviousness

(i) In the context of AI inventions, what art does the standard refer to? Should the art be the field of technology of the product or service that emerges as the invention from the AI application?

Section would not adopt a particular standard or art to characterize AI inventions because the Section prefers to avoid establishing idiosyncratic legalities for particular technical arts. Further, given both the multifaceted and evolving character of AI technologies, the term "AI invention" is not well-defined, at least for now, by some concrete collection of elements or features. Rather, the elements of an AI invention will be some combination of features that underlie, engender, and/or utilize the human-simulation aspects of the AI invention. In other words, AI inventions and an AI-assisted invention should be measured against the art invoked by the claims of the patent application.

(ii) Should the standard of a person skilled in the art be maintained where the invention is autonomously generated by an AI application or should consideration be given to replacing the person by an algorithm trained with data from a designated field of art?

A person of ordinary skill in the art should be maintained as such, with the existing understanding that current tools—including AI discovery and optimization—is available.

The standard should not be replaced by an algorithm for inventions autonomously generated by an AI agent because the Section expressly rejects the notion that such an invention is eligible for a patent. Because there is no truly "autonomous" AI, the outputs

of an AI will be the results of the inputs and configurations of a human. There is, therefore, a person having ordinary skill in the art comparable to that human.

(iii) What implications will having an AI replacing a person skilled in the art have on the determination of the prior art base?

The Section does not favor having an AI replace a person skilled in the art with the availability of generally available AI.

(iv) Should AI-generated content qualify as prior art?

Yes, provided such content satisfies the current requirements to qualify as prior art.

Issue 4: Disclosure

(i) What are the issues that AI-assisted or AI-generated inventions present for the disclosure requirement?

Balancing the permissible assumptions regarding the knowledge possessed by a person having ordinary skill in the art, against "black box" descriptions, the Section is concerned a written description for an AI invention can easily devolve into a "black box." This issue is not unique to AI inventions, as it is regularly addressed in existing varieties of software inventions. And just as in existing software inventions, well-known processes need not be described in detail, whereas the to-be-rewarded invention (*i.e.*, the claimed features) should be described in such detail to show "possession" and to enable practice by a person having ordinary skill in the art.

If a non-standard AI application is claimed as a component, then more disclosure should be required than if only a standard AI applicant is so identified. As an example, for general deep learning neural networks, the written description need not disclose the number of hidden layers or neurons employed because they are unnecessary and may be referred to functionally. In contrast, for some types of neural networks, such as convolutional neural networks, the hidden-layer designs for a particular perception problem will be unique/novel and should be described in detail.

If the AI application itself is not a component of the invention, but the AI application's contribution is non-standard, then more disclosure may be required for enablement if the claimed invention is not otherwise enabled.

(ii) In the case of machine learning, where the algorithm changes over time with access to data, is the disclosure of the initial algorithm sufficient?

This depends upon the claimed subject matter. If the claimed invention involves an algorithm that changes substantially based on the data it accesses, then some disclosure of

how the algorithm is expected to change in response to the type of data to which it is provided access may be required in order to describe and enable the algorithm's evolution based on such data. But if the changed algorithm is a predictable refinement, disclosure of the initial algorithm and the type of data accessed may be adequate.

(iii) Would a system of deposit for algorithms, similar to the deposit of microorganisms, be useful?

For claims that implicate a "black box" algorithm in the written description, where the algorithm is developed or evolves with a certain training data set and there is not adequate enablement to meet the claim, it may be desirable to provide applicants with an *elective* option to deposit a copy of the algorithm to promote research—with some implied license. There is a question about whether there would be meaningful participation, as well as cybersecurity concerns in protecting such a database.

(iv) How should data used to train an algorithm be treated for the purposes of disclosure? Should the data used to train an algorithm be disclosed or described in the patent application?

This depends upon the claimed subject matter. The disclosure standards should not vary—adequate description showing possession and enablement. Whatever it takes to enable a person of ordinary skill in the art claimed with standard tools, including standard AI, and an adequate description of the training data should meet existing patenting standards. If the claimed invention turns on narrowly specified (or precise) training data, that data and possibly its interaction with the trained algorithm should be disclosed. Similar considerations apply to putative prior art.

(v) Should the human expertise used to select data and to train the algorithm be required to be disclosed?

Though the Section has not fully considered this issue at this stage, it may be considered that, to the extent that the claim is not disqualified for "mental steps," those mental steps should be described in sufficient detail to show possession of the invention and enable the claimed invention.

Issue 5: General Policy Considerations for the Patent System

(i) Should consideration be given to a sui generis system of IP rights for AI-generated inventions in order to adjust innovation incentives for AI?

No *sui generis* law is needed at this time. The Section, which includes practitioners in the AI patenting and investment fields, has identified no need to adjust innovation incentives for AI.

(ii) Is it too early to consider these questions because the impact of AI on both science and technology is still unfolding at a rapid rate and there is, at this stage, insufficient understanding of that impact or of what policy measures, if any, might be appropriate in the circumstances?

The Section did not find urgency in any rapid expansion of AI uses, which are largely based on theories and processes that have been studied for decades if only recently popularized by faster processing and industry interest. The Section's view is therefore that under current conditions, no new policy decisions are required.

COPYRIGHT AND RELATED RIGHTS

Issue 6: Authorship and Ownership

(i) Should copyright be attributed to original literary and artistic works that are autonomously generated by AI or should a human creator be required?

The Section resolved that an AI process or machine may not be an author under US copyright law because of the requirement of "original" creation contemplated by the Constitution for copyright incentives for human authors and described by the Supreme Court in automated technology cases (*e.g.,* photography) as human "conception" for authorship and such conception can be attributed to a human being who puts in motion and provides any input (including objectives for patenting) for a current AI agent or other instrumentality to execute a work fixed on a tangible medium of expression.

Article I, section 8, clause 8 of the Constitution delegated to Congress of the power to enact patent and copyright laws to "promote progress of science and the useful arts" by incentivizing "authors and inventors." The Framers only knew of authors and inventors as human individuals.[3]

The Copyright Act of 1790 (1 Stat. 124) provided to "authors" exclusive rights to print, publish and sell their maps, charts and books, referring to the authors as "he," "him," "they" or "them." The Supreme Court in 1879 distinguished trademarks from the delegated protection of "*writings*... only such as are *original*, and are founded in the *creative powers of the mind*."[4]

[3] Earlier in the century, the British statute of 8 Anne, c. 19 (1710), wrested from "Printers [and] Booksellers" and gave to "Authors" the exclusive right to print their books. "The copyright of authors has been solemnly adjudged, in Great Britain, to be a right of common law. The right to useful inventions seems with equal reason to belong to the inventors. The public good fully coincides in both cases with the claims of individuals." THE FEDERALIST NO. 43 (James Madison) (1788), quoted by Annemarie Bridy, *Coding Creativity: Copyright and the Artificially Intelligent Author*, 201 STAN. TECH. L. REV. 5, note 14.

[4] In re Trade-Mark Cases, 100 U.S. 82, 94 (1879) (emphasis in original).

Within a decade, the Court in *Burrow-Giles Lithographic Co. v. Sarony* affirmed the copyright-protected authorship of Napoleon Sarony in his photograph of Oscar Wilde against arguments that "that a photograph being a reproduction, on paper, of the exact features of some natural object, or of some person, is not a writing of which the producer is the author."[5] The Court's analysis of the human versus instrumentality contribution is relevant to our current consideration of the AI instrumentality:[6]

> . . . An *author* . . . is 'he to whom anything owes its origin; *originator*; maker; one who completes a work of science or literature.' Worcester. . . . By writings . . . is meant the literary *productions* of those authors, and congress very properly has declared these to include all forms of writing, printing, engravings, etchings, etc., by which the i*deas in the mind of the autho*r are given *visible expression*. . . .[7]
>
> We entertain no doubt that the constitution is broad enough to cover an act authorizing copyright of photographs, so far as they are representatives of *original intellectual conceptions of the author*.[8]
>
> "In my opinion, 'author' involves *originating,* making, *producing*, *as the inventive or master mind*, the thing which is to be protected, whether it be a drawing, or a painting, or a photograph;"[9]

The contribution of Sarony was recognized:

> But it is said . . . a photograph is the mere mechanical reproduction of the physical features or outlines of some object, animate or inanimate, and involves no originality of thought or any novelty in the intellectual operation connected with its visible reproduction in shape of a picture. . . . It is simply the manual operation, by the use of these instruments and preparations, of transferring to the plate the visible representation of some existing object, the accuracy of this representation being its highest merit. This may be true in regard to the ordinary production of a photograph, and that in such case a copyright is no protection. On the question as thus stated we decide nothing.[10]

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[5] Burrow-Giles Lithographic Co. v. Sarony, 111 U.S. 53, 56 (1884).

[6] The Court noted that the Framers were aware that "copyright, as the exclusive right of *a man* to the production of *his own genius* or intellect, existed in England at that time." Id. at 58, *citing* 8 Anne, c. 19.

[7] 111 U.S. at 57-58 (emphasis added).

[8] Id. at 58 (emphasis added).

[9] Id at 61, *quoting* Nottage v. Jackson, 11 Q.B. Div. 627 (1883) (emphasis added).

[10] 111 U.S. at 58-59.

> [Distinguishing from patent examination copyright registration, it is] much more important that when the supposed author sues for a violation of his copyright, the existence of those facts of *originality*, of *intellectual production*, of *thought*, and ***conception*** *on the part of the author* should be proved than in the case of a patent-right. . . .[11]

Thus, the notion of **"conception"** as a *sine qua non* for both authors and inventors was recognized.

A generation later, finding copyrightability of work-for-hire chromolithographs depicting an advertised circus in *Bleistein v. Donaldson Lithographing Co*., Justice Holmes mentioned neither novelty nor genius of the author (as mentioned in with respect to Sarony's art), but nonetheless maintained,

> . . . The [chromolithograph] is the *personal reaction of an individual* upon nature. Personality always contains something unique. It expresses its singularity even in handwriting, and a very modest grade of art has in it something irreducible, which is *one man's alone.* That something he may copyright . . .[12]

Over the next half of the twentieth century witnessing ever greater popularization of copyrighted works, US copyright law moved further away from notions of creativity and genius, where, for example, the Second Circuit found copyrightable mezzotint reproductions of works in the public domain, remarking, "No matter how poor artistically the 'author's' addition, it is enough if it be *his own*."[13] Even "a shock caused by a clap of thunder . . . may yield sufficiently distinguishable variations [to be copyrighted]."[14]

Since the 1976 revision of the Copyright Act from its former publish-with-a-copyright-notice *quid pro quo* towards the Berne Convention roots in "author's rights," by 17 U.S.C. § 102(a), "[c]opyright protection subsists . . . in *original works of authorship* fixed in any tangible medium of *expression* . . ."[15] None of the highlighted terms, "original",

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[11] *Id*. at 59-60 (emphasis added).

[12] Bleistein v. Donaldson Lithographing Co., 188 U.S. 239, 250 (1903). The work-for-hire doctrine was codified in the 1909 Copyright Act, ch. 320, 35 Stat. 1075, 1088 and superseded by the 1976 Copyright Act, Pub. L. No. 94-553, 90 Stat. 2541. The provision at 17 U.S.C. § 201(b) that "the employer or other person for whom the work was prepared is considered the author for purposes of this title" may be argued as creating an "author-in-law" rather than an "author-in-fact."

[13] Alfred Bell & Co. v. Catalda Fine Arts, Inc., 191 F.2d 99, 103 (2d Cir. 1951), *citing Bleistein*, 188 U.S. at 250.(emphasis added).

[14] *Alfred Bell*, 191 F.2d at 105.

[15] 17 U.S.C. § 102(a) (emphasis added).

"works", "authorship" and "expression" are further defined in the 1976 Act, although the traditional "idea/expression" separation of non-copyrightable elements from copyrightable elements finds some support in contrasting the 17 U.S.C. §102(a) requisite fixation in a "tangible medium of expression" to the barring by 17 U.S.C. § 102(b) of copyright protection for any "idea, procedure, process, system, method of operation, concept, principle or discovery." Thus, citing section 102, the Court has stated:

> As a general rule, the author is the party who actually *creates* the work, that is, *the person* who *translates an idea* into a fixed, tangible *expression* entitled to copyright protection.[16]

Shortly thereafter, the Court in *Feist Publications, Inc. v. Rural Telephone Service Co.* equated "[the] principle, known as the idea/expression or fact/expression dichotomy, appl[ying[to all works of authorship."[17] In rejecting copyright based on "sweat of the brow" investment and finding that an alphabetical arrangement of the facts of subscriber telephone numbers failed the constitutional test of originality (made independently) with "some minimal level of creativity,"[18] the unanimous *Feist* Court returned to its prior requirements in *The Trade-Mark Cases* and *Burrow-Giles* of human "conception" and "creativity" for copyrightability,[19] albeit the level of creativity is undefined.

Debates over AI creativity continue in both the computer science and legal academies.

At this time, "the [Copyright] Office will not register works produced by a machine or mere mechanical process that operates randomly or automatically without any creative input or intervention from a human author."[20] The Office has proposed the following addendum:

> The crucial question is "whether the 'work' is basically one of human authorship, with the computer [or other device] merely being an assisting instrument, or whether the traditional elements of authorship in the work (literary, artistic, or musical expression or elements of selection, arrangement, etc.) were actually

[16] Community for Creative Non-Violence v. Reid, 490 U.S. 730, 738 (1989) (but applying the exception for works for hire).

[17] Feist Publ'ns, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340, 349 (1991).

[18] *Id.* at 358.

[19] *Id.* at 346-47.

[20] U.S. COPYRIGHT OFFICE, COMPENDIUM OF U.S. COPYRIGHT OFFICE PRACTICES (THIRD) § 313.2 (3d ed. 2017). An example referred to Naruto v. Slater, 888 F.3d 418, 426 (9th Cir. 2018) ("monkey selfie" case, citing ownership succession references imply "humanity").

> conceived and executed not by man but by a machine." U.S. Copyright Office, Report to the Librarian of Congress by the Register of Copyrights 5 (1966).[21]

Several prominent legal commentators reject authorship by AI/computers at this time when the foreseeable cases of computer-generated works can be addressed by existing copyright law.[22] Professor Jane Ginsburg proposes that an "act of authorship" requires (1) "conception" (recited in *Burrows-Giles* and quoted in *Feist*) "more than envisioning the general idea for a work" -- "elaborating a detailed creative plan for the work" where (2) the conception guides or informs "'execution," the process through which the author converts the plan to concrete form."[23] By application of this test to the possible authors of works resulting from "generative" or "partially generative" machines[24] – the programmers of the machines or their users – Professor Ginsburg proposes allocations of authorship based on existing joint authorship law – extended by agency (rather than the more limited work-for-hire rules). However, where the joint authorship rules fail, there are cases of "authorless" works.

Professor Arthur Miller, a member of the Commission On Technological Uses (CONTU) that made recommendations for the 1976 Copyright Act and the inclusion in 1978 of computer programs as literary works, dismissed in 1993 any requirement by the Constitution that authors be human and looked to whether AI authorship would promote the "progress of science and the useful arts."[25] The Section is unaware of any "promotion of progress" case that has been made to warrant substantial change to US copyright law to recognize AI authorship, to provide authors for Professor Ginsburg's "authorless" cases,[26] or to modify the work-for-hire rules. There are substantial arguments that

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[21] *Id.,* Proposed Amendment (March 15, 2019).

[22] *E.g.,* Bridy, *supra* note 3, at ¶ 63 (James Grimmelmann, *There's No Such Thing as a Computer-Authored Work – And It's a Good Thing, Too*, 39 Colum. J.L. & Arts 403 (2016) (computer-generated works cases addressable by allocation of authorship under existing law, supplemented by modification to work-for-hire law); Jane C. Ginsburg & Luke Ali Budiardjo, *Authors and Machines,* 34 BERKELEY TECH. L.J. 343 (forthcoming, pagination in proof), available at https://ssrn.com/abstract=3233885.

[23] *Id.* at 347.

[24] "Generative machine" refers to any machine, other than a mere "ordinary tool," that "contributes to or results in a completed work," either by creating a work at the push of a button ("fully-generative" machines) or by inviting the user to input instructions, which guide and inform a creative output, thereby fusing the creative contributions of the machine's designer and user ("partially-generative" machines).

Id. at 348 n. 18.

[25] Arthur R. Miller, *Copyright Protection for Computer Programs, Databases, and Computer-Generated Works: Is Anything New Since CONTU?*, 106 HARV. L. REV. 977, 1060–65 (1993).

[26] Professor Ginsburg noted that authors, not AI, were provided incentives. Ginsburg, *supra* note 22, at 114-15.

"promotion of progress" may be hindered by automatically and prodigiously authored copyrighted works.

(ii) In the event copyright can be attributed to AI-generated works, in whom should the copyright vest? Should consideration be given to according a legal personality to an AI application where it creates original works autonomously, so that the copyright would vest in the personality and the personality could be governed and sold in a manner similar to a corporation?

The Section resolved that an AI process or machine may not be an owner of copyright under US copyright law because the Constitution contemplated copyright incentives for human authors and AI processes or machines are not recognized as legal entities capable of ownership and legal responsibilities. It was considered that imbuing AI processes or machines with legal entity status is not justified by any demonstrated need – including any need for copyright ownership purposes – and is counter-indicated by lack of any accountability (including liability) of the AI process or machine.

(iii) Should a separate sui generis system of protection (for example, one offering a reduced term of protection and other limitations, or one treating AI-generated works as performances) be envisaged for original literary and artistic works autonomously generated by AI?

No *sui generis* law is needed at this time. The Section, which included practitioners in copyright and investment fields faced with AI, have identified no need to adjust innovation incentives for AI by creating a *sui generis* law. Again, there was consensus that there is no true "autonomous" generation of copyrightable works by current and foreseeable AI. The AI agent may give a "performance," but it is at the direction of either the creator of the AI agent (even through intermediary agents) or a user-director of the agent. *See* comments on Issue 10 below.

Issue 7: Infringement and Exceptions

(i) Should the use of the data subsisting in copyright works without authorization for machine learning constitute an infringement of copyright? If not, should an explicit exception be made under copyright law or other relevant laws for the use of such data to train AI applications?

The Section is unclear on the meaning of "use of the data subsisting in copyright works." Under US law, copyright infringement exists where anyone violates the exclusive rights of the copyright owner without authorization, which could occur at any stage of machine learning. Cases of *prima facie* copyright infringement may be subject to certain defenses, including "fair use," codified under 17 U.S.C. § 107.

The Section did not determine that there should be an explicit exception for data training for AI applications for all purposes. There are two categories of AI training through "ingestion" (copying at any stage of the training) of copyrighted works distinguished by whether resulting product of the trained AI is an "expressive work" (literary, musical, graphic, *etc.*) such as would compete with the ingested work(s).

The first category, which does not result in an expressive work, ingests copyrighted material (such as maps and photographs) for the purpose of training an AI for tasks (such as navigation, facial recognition, indexing, text-mining, *etc.*) that may be determined to be "transformative" uses and "fair" under the current U.S. fair use framework, depending on a case-by-case analysis of the facts. Such analysis should consider the effect on the market among other factors rather than a blanket exception.

The second category, in which an AI is trained to generate expressive works, particularly emulative works, presents a great competitive threat to human authorship. Although infringement may be found in the traditional manner if an AI-generated work includes sufficient copyrighted elements from an ingested work so that it is substantially similar, there is expected to be many AI generated works for which that is not the case. In those cases, the potential copyright claim for the owners of the copyrighted works used to train the AI is for the copyright use of the copyrighted work at various stages of ingestion rather than in the end-product. An outright exception for ingestion use would leave creators and other copyright owners with no recourse against use of their works to create competitive works.

For example an AI has learned from the original conception, style, and execution of human authors of children's cartoon characters by ingesting a large quantity of the human-authored works and creates new characters that do not copy appreciably from any particular work. Instead, it has learned, for instance, that successful children's cartoon characters have fur and snouts, and rendered its own version of these features. The pattern learned by the AI might be commercially disseminated to such an extent and at such a high volume that human-created cartoon characters are crowded out of the market entirely. This has the potential to discourage human creators and greatly impede the "progress of science and the useful arts" in so far as authors will lose the incentive to create.

The Section noted strong opinion that it is imperative that human authors whose works are ingested by AI algorithms and processes to generate commercial expressive works have the right to deny permission for such uses or receive remuneration for such uses. Consideration was suggested of the EU's recent approach to use of "data" for which there might be such remuneration:

> In certain instances, text and data mining can involve acts protected by copyright, by the sui generis database right or by both, in particular, the reproduction of works or other subject matter, the extraction of contents from a database or both which occur for example when the data are normalised in the process of text and data mining. Where no exception or limitation applies, an authorisation to undertake such acts is required from rightholders.[27]

Although not resolved in the abstract, the Section also noted that it is unclear whether current laws for assigning liability for copyright infringement are adequate to address a situation in which an AI process creates a work that infringes a copyrighted work. AI encompasses a broad swath of existing and to-be-developed systems and tools. If an AI process infringes a third-party work because of the direct acts of the AI developer, that person would generally be deemed the infringer; and if the infringement results from acts of the end user of the AI, then the end user would be liable. However, under the doctrine of volition in copyright law, there may not always be a human or corporate user that has sufficient volition to be a direct infringer. Moreover, the case law on secondary liability is sufficiently mixed that is it not clear whether and when the AI creator would be deemed liable as a contributory infringer for inducing or otherwise causing the infringement or as a vicarious infringer because they benefit financially from the infringement and can control it. The Section does not believe existing case law is prepared to address the types of infringement that AI will be capable of creating and causing. At the same time, the Section believes it is premature to amend the law. We need to first better understand and even see the technologies of the future before we can create new rules. As the use of AI grows and AI begins to be capable of creating infringing works, it will be extremely important to create clear rules of liability and not allow the AI creators and users to escape liability so that copyright owners have no recourse.

Scenarios at the extreme—where intent and purpose have only one possible interpretation—might be addressed under existing law. For instance, if AI is created to be used solely for infringing purpose, under the *Napster* and *Grokster* decisions[28] the creators of the system could be held liable. But if the AI is capable of other substantial non-infringing uses, then under *Betamax*, the purveyor of the AI technology cannot be held liable for potential infringement by its users, unless inducement is found.[29] Further,

[27] Directive 2019/790/EC of the European Parliament and of the Council of 17 April 2019 Relating to Copyright and related rights in the Digital Single Market and amending Directives 96/9/EC and 2001/29/EC, 2019 O.J. (L 130/92)

[28] A&M Records, Inc. v. Napster, Inc., 239 F.3d 1004 (2001); MGM Studios Inc. v. Grokster, Ltd., 545 U.S. 913 (2005).

[29] Sony Corp. of America v. Universal City Studios, Inc., 464 U.S. 417 (1984).

the types of volitional act considered under the *Cartoon Network*[30] decisions and its progeny might allow the creators and publishers of AI systems used to infringe to escape direct liability. At the other side of the coin, the human user will not always have the volition required for all acts to be directly liable. This is an area of law rife for abuse if not addressed with a clear policy and legal rules.

(ii) If the use of the data subsisting in copyright works without authorization for machine learning is considered to constitute an infringement of copyright, what would be the impact on the development of AI and on the free flow of data to improve innovation in AI?

As in the response to 7(i), it is unclear what "use of the data subsisting in copyright works" means. As stated in that response, there is strong opinion that human authors whose work is "ingested" and "emulated" by AI should have recourse even if the resulting emulation does not infringe copyright rights (but perhaps "ingestion" might). On the other hand, the US has rejected a European-style database protection, as reconfirmed in the Section resolution (5) at page 3 supra and explained in response to Issue 10, in favor of "free flow of data" an aspect of promoting "progress of science and the useful arts" as explained in *Feist, supra* note 17.

(iii) If the use of the data subsisting in copyright works without authorization for machine learning is considered to constitute an infringement of copyright, should an exception be made for at least certain acts for limited purposes, such as the use in non-commercial user-generated works or the use for research?

The Section repeats its response to 7(ii). It was noted that the new EU Copyright Directive, *supra* note 27, excludes archival research, educational, and non-commercial uses from its remunerative provision under European copyright and database rights.

(iv) If the use of the data subsisting of copyright works without authorization for machine learning is considered to constitute an infringement of copyright, how would existing exceptions for text and data mining interact with such infringement?

The Section repeats its response to 7(ii). In the U.S., there is no "existing exceptions" for "text or data mining"; appropriation of original text or organization of data may infringe copyright, violate trade secret, contract or computer access laws (*see* Resolution (5), page 3 *supra*), but the Section is not recommending additional U.S. law to protect "data."

[30] Cartoon Network, LP v. CSC Holdings, Inc., 536 F.3d 121 (2d Cir. 2008).

(v) Would any policy intervention be necessary to facilitate licensing if the unauthorized use of data subsisting in copyright works for machine learning were to be considered an infringement of copyright?

The Section repeats its response to 7(ii). The Section did not specifically consider licensing as proposed under question 7(v) for a regime of copyright protection for "data.".

(vi) How would the unauthorized use of data subsisting in copyright works for machine learning be detected and enforced, in particular when a large number of copyright works are created by AI?

The Section repeats its response to 7(ii). The Section did not specifically consider detection.

Issue 8: Deep Fakes

(i) Since deep fakes are created on the basis of data that may be the subject of copyright, to whom should the copyright in a deep fake belong? Should there be a system of equitable remuneration for persons whose likenesses and "performances" are used in a deep fake?

Again, the analysis in response to question 7(i) applies, although the Section did not address question 8(i).

It may be considered that, if the "fake" is a matter of fact, it is not subject to U.S. copyright law. If there is a textual or image reproduction, there may be infringement under the analysis previously discussed. The exclusive right to prepare a derivative work may be applicable. U.S. common law privacy (in some but not all states) recognizes publicity in "false light" (if highly offensive) or appropriation of name or likeness for benefit of the appropriator. The limited common law (and in some states, statutory) right of publicity may be extended more into a more general right to personality.

Issue 9: General Policy Issues

(i) Are there seen or unforeseen consequences of copyright on bias in AI applications? Or is there a hierarchy of social policies that needs to be envisaged that would promote the preservation of the copyright system and the dignity of human creation over the encouragement of innovation in AI, or vice versa?

The Section did not consider the specific issue of bias; however, the following is offered for consideration: Enforcement of copyrights in images (as opposed to images dedicated to commons libraries) appear to drive new facial recognition entrants to train their AI models using biased libraries. It is not clear that even if data sets are completely

accessible at acceptable cost to the public that bias can be avoided. Accessibility implicates copyrights, trade secrecy and other data protection (such as recognized for personally identifiable information in some jurisdictions and even more extensively to data "about" data subjects such as observation of data subjects in public or the "envelope" address and time information of digital information packets used in modern communications). A "hierarchy" of social policies differs between jurisdictions. The U.S. Constitution (relatively early), delegated to Congress the power to enact copyright and patent law to promote "progress of science and the useful arts" by granting exclusive rights to authors and inventors, but recognizes "human dignity" in the Bill of Rights including freedom of speech. The U.S. "copyright system" is less aligned with "human dignity" (or "author's rights") than the European "copyright system." U.S. "freedom of speech" sometimes clashes with its copyright system, but is generally in line with the encouragement of innovation.

DATA

Issue 10: Further Rights in Relation to Data

(i) Should IP policy consider the creation of new rights in relation to data or are current IP rights, unfair competition laws and similar protection regimes, contractual arrangements and technological measures sufficient to protect data?

The Section resolved that no new law was indicated for protection of data sets and databases beyond the patent, copyright, trade secrets and protections against unauthorized access to computer systems such as under the Computer Fraud and Abuse Act, 18 U.S.C. § 1030.

A generation ago, the Section rejected the core of the European Commission proposal for protection of databases[31] that would "provide for a right [for ten years] for the maker of a database to prevent the unauthorized extraction or re-utilization, from that database, of its contents, in whole or in substantial part, for commercial purposes."[32] The EC ultimately issued its current database directive[33] that, while recognizing copyright protection for "databases which, by reason of the selection or arrangement of their contents, constitute the author's own intellectual creation,"[34] directed an expressly *sui generis*

[31] European Commission Proposal for a Council Directive on the Legal Protection of Databases, 1992 O.J. (C 156) 4.

[32] *Id.* arts. 2(5), 9(3), at 7-8, 9.

[33] Council Directive 96/9 of 11 March 1996 on the Legal Protection of Databases, 1996 O.J. (L 77) 20.

[34] *Id.* art. 3(1), at 25.

> [fifteen year] right for the maker of a database which shows that there has been qualitatively and/or quantitatively a substantial investment in either the obtaining, verification or presentation of the contents to prevent extraction and/or re-utilization of the whole or of a substantial part, evaluated qualitatively and/or quantitatively, of the contents of that database.[35]

A recent evaluation by the staff of the EC summarized that "the *sui generis* right continues[36] to have **no proven impact** on the overall production of databases in Europe, nor on the competitiveness of the EU database industry."[37] Although noting that the directive "does not apply broadly to the data economy (machine-generated data, IoT devices, big data, AI, etc.)"[38] the staff made no recommendation to extend the directive.

The United States has taken the position that its US copyright law protection of compilations meeting *Feist* originality (and creativity) complies with TRIP Article 10(2) (Compilations of Data).[39] Congress has not enacted a database protection law notwithstanding multiple introductions over the decades, including several following the issuance of the EC Directive and several since. Given the experience of the EU with its Database Directive and the comparative growth of the database industries in the U.S. under *Feist*, the Section saw no reason to adopt a *sui generis* database protection law similar to that of the EU Database Directive.

AI data sets and databases can be maintained as trade secrets or otherwise protected from public access or disclosure. Indeed, the business model for digital product distribution has moved in major, if not dominant part, to provision as a service behind vendor firewalls or periodically updated and authorized downloads. Similar combinations are likely to be deployed for automated driving.

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[35] *Id.* art. 7(1), at 25. This is essentially protection of the "sweat of the brow" rejected by *Feist*, *supra* note 17.

[36] A similar evaluation was made earlier in EU Commission Services – DG Internal Market, *First Evaluation of the Directive 96/9/EC on the Legal Protection of Databases* 24 (2005), contrasting the perceived growth of the U.S. database industry under the contrasting "originality" versus "sweat-of-the-brow" approach adopted for compilation copyrights under *Feist*, *supra* note 17.

[37] Commission Staff, *Executive Summary of the Evaluation of Directive 96/9 on the Legal Protection of Databases* 1 (2018) (emphasis in original), https://ec.europa.eu/digital-single-market/en/news/staff-working-document-and-executive-summary-evaluation-directive-969ec-legal-protection (also noting the relative success of the US database industry under *Feist*).

[38] *Id.* at 2 (emphasis in original).

[39] *Agreement on Trade-Related Aspects of Intellectual Property Rights, Including Trade in Counterfeit Goods (Annex III),* GATT Doc. MTN/FA II-A1C (1994) [hereinafter *TRIPS Agreement*], as amended Jan. 23, 2017, https://www.wto.org/english/docs_e/legal_e/31bis_trips_01_e.htm.

It is difficult to think of cases in which AI data sets or databases are released into the public (except by open-source design) and may need to be protected by copyright-like protection where copyright does not already apply. Proprietary training data may be provided under confidentiality agreement prohibiting further distribution. Trained models may be provided by developers to clients under similar agreements with negotiated allocation of "background" and "foreground" technology "ownership." To the extent that any elements of AI data sets and databases are required to be or by necessity must be made publicly available, such public access, use, or distribution can be controlled through terms of service and other application of unauthorized computer access laws.

In cases of access to training data required by privacy, product safety, anti-bias and other associated laws, such access can be protected against further dissemination through existing laws, for example, by contract generally or protective order in court proceedings. Protection of creative output from an AI-enabled creative platform (for example, a game platform allowing user-generated content) can be managed under existing copyright law, supplemented by contractual arrangements. Computer-generated news reports may still be protected by "hot news" misappropriation as unfair competition.

The very different business and use contexts of data set components of AI systems may not be well-served by a one-size-fits-all data protection scheme that leaves open what constitutes violation if such concepts as "substantial" extraction in the EC Directive are applied. Those concepts applied best to "bulk data" such as large customer or prospect lists that were relatively static.

(ii) If new IP rights were to be considered for data, what types of data would be the subject of protection?

The Section did not specifically consider question 10(ii) because it had determined that no new IP rights were called for at this time and rejected the European Database Directive approach. The Section has concern that some protection of "data" provided under the EU's General Data Protection Regulation challenges existing balances between public and proprietary interests. It is monitoring the American Law Institute (ALI) and European Law Institute (ELI) project on "Principles for a Data Economy" that appears to recognize interest in even the smallest atomistic "data" as having some interests including by a data subject such as an individual to which that data relates.

(iii) If new IP rights were to be considered for data, what would be the policy reasons for considering the creation of any such rights?

Again, the Section rejected this premise, but considered the possible need to license data sets or databases for training or use with AI models, and concluded that existing

contractual restraints were adequate to protect specific situations where the data was not offered in a cloud services arrangement behind a firewall.

(iv) If new IP rights were to be considered for data, what IP rights would be appropriate, exclusive rights or rights of remuneration or both?

Again, the Section rejected this premise on the basis that existing IP rights and contractual control of access were adequate for protecting AI-related data. Some discussion was had that the controllers of the most data dominate over and are protected from new entrants that may offer innovative and bias-detecting competition in alternative filtering and analysis of data largely collected and analyzed without full understanding by data subject. Considered were some proposals to make data collections available to competitors for some remuneration.

(v) Would any new rights be based on the inherent qualities of data (such as its commercial value) or on protection against certain forms of competition or activity in relation to certain classes of data that are deemed to be inappropriate or unfair, or on both?

Again, the Section rejected this premise on the basis that existing IP rights and trade secret and contractual control of access was adequate and appropriate for protecting AI-related data. Trade secret protection already addresses the "inherent quality" of having independent economic value because trade secrets are not generally available to a relevant public. Some discussion was had that public safety and anti-discrimination policies calling for transparency of algorithms and their training data to uncover bias and safety issues may call for limitation of IP rights or trade secret protection calling for compulsory licensing or controlled inspection rights, possibly subject to remuneration.

(vi) How would any such rights affect the free flow of data that may be necessary for the improvement of AI, science, technology or business applications of AI?

Again, the Section rejected this premise on the basis that existing IP rights and trade secret and contractual control of access was adequate and appropriate for protecting AI-related data, including for protecting the free flow of data. As mentioned in response to question 10(v), there was some consideration that there might be a limitation of rights, possibly subject to remuneration, to allow review of algorithms and training data for bias and safety.

(vii) How would any new IP rights affect or interact with other policy frameworks in relation to data, such as privacy or security?

As stated in response to question 10(ii), the Section, considering data protection (privacy and security) along the lines of the GDPR, identified conflicts between the application of

GDPR "fair information practices principles," particularly rights to access, correction and deletion, with existing IP protections of data. Additional rights for the data holder may increase such conflicts, while exceptions to rights as discussed in response to question (v) might decrease such conflicts.

(viii) How would any new IP rights be effectively enforced?

New IP rights in data (broadly defined) were rejected by the Section.

DESIGNS

Issue 11: Authorship and Ownership [Designs]

(i) Should the law permit or require that design protection be accorded to an original design that has been produced autonomously by an AI application? If a human designer is required, should the law give indications of the way in which the human designer should be determined, or should this decision be left to private arrangements, such as corporate policy, with the possibility of judicial review by appeal in accordance with existing laws concerning disputes over authorship?

Although the Section did not specifically address design patents, it is proposed that the Section's response to question 1(i) should apply, as the same rules for conception apply to design patents as for utility patents in the United States.

(ii) Do specific legal provisions need to be introduced to govern the ownership of autonomously generated AI designs, or should ownership follow from authorship and any relevant private arrangements, such as corporate policy, concerning attribution of authorship and ownership?

Although the Section did not specifically address design patents, it is proposed that the Section's response to questions 1(i) and 1(ii) should apply, as the same issues apply to initial ownership by the inventor (or author) and the entity capacity to own assets and accountability/liability which has not been defined for AI instrumentalities.

TECHNOLOGY GAP [BETWEEN NATIONS] AND CAPACITY BUILDING

Issue 12: Capacity Building [Technology Gap Between Nations]

(i) What policy measures in the field of IP policy might be envisaged that may contribute to the containment or the reduction in the technology gap in AI capacity? Are any such measures of a practical nature or a policy nature?

The Section did not consider this issue specifically. Consideration of opening underlying algorithms and training data for third party review or competitor alternative analysis for

public safety, anti-bias or competition policy purpose was discussed in response to questions 10(iv)-(vi) may aid in "closing technology gaps."

ACCOUNTABILITY FOR IP ADMINISTRATIVE DECISIONS

Issue 13: Accountability for Decisions in IP Administration

(i) Should any policy or practical measures be taken to ensure accountability for decisions made in the prosecution and administration of IP applications where those decisions are taken by AI applications (for example, the encouragement of transparency with respect to the use of AI and in relation to the technology used)?

The Section determined that no changes to policy or procedure were required for AI applications, although due attention should be given to issues common to computer-related inventions.

(ii) Do any legislative changes need to be envisaged to facilitate decision-making by AI applications (for example, reviewing legislative provisions on powers and discretions of certain designated officials)?

The Section determined than no changes to policy or procedure were required for AI applications, although due attention should be given to issues common to computer-related inventions.

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The ABA-IPL Section appreciates the opportunity to provide feedback to the WIPO Secretariat on the Issues. ABA-IPL looks forward to further dialog with the WIPO Secretariat with regard to the issues raised above.

Sincerely,

George W. Jordan III
Chair, ABA Section of Intellectual Property Law