

# COPYRIGHTABILITY OF WORKS GENERATED BY ARTIFICIAL INTELLIGENCE: COMPARATIVE ANALYSIS OF THE UNITED STATES, THE UNITED KINGDOM, AND CHINA

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#### ABSTRACT

The rise of generative artificial intelligence ('AI') has brought a number of challenges that the legal systems of the world ought to address. It is especially pertinent with respect to intellectual property ('IP') since AI and IP are intrinsically intertwined due to the nature of machine learning. This thesis will explore the concept of copyrightability in respect of AI creations, focusing specifically on the issue of granting copyright protection over AI-generated works in the absence of or with negligible human input involved in their creation in the United States (the 'US'), the United Kingdom (the 'UK'), and China.

The main method employed by this thesis is comparative analysis. This thesis will scrutinize copyright statutes and guidelines issued by dedicated state agencies, relevant case law, and legal scholarship in the US, UK, and China to identify nuances in how each jurisdiction addresses the novel challenges posed by generative AI in the context of copyright protection.

It will be shown that the legal landscape of AI-generated works' copyrightability is highly inconsistent. While the US disclaims copyrightability of AI-generated works in its entirety, the UK and China both recognize AI-generated works as capable of copyright protection, however, they diverge when assigning authorship over such works. The factors impeding copyright protection of AI-generated works include the requirement of human intervention and an anthropocentric construction of the term 'author'. A solution to this regulatory fragmentation could be the introduction of an international standard for AI copyright protection as proposed by this thesis.

### **INTRODUCTION**

The emergence and subsequent development of generative AI have empowered creators all around the globe to devise masterpieces in a matter of seconds and with unprecedented ease. In this day and age generative AI use cases range from generating LinkedIn profile pictures<sup>1</sup> to preparing full-fledged reports and scientific papers<sup>2</sup>. Furthermore, AI and its algorithms are becoming a lot more widespread and accessible to the general public, not only to machine learning engineers and data scientists as was the case before. With the release of ChatGPT by OpenAI generative AI has entered the area of mainstream.

Although AI can undoubtedly be praised for opening the door to artistic expression for people regardless of their background, since anyone can become a poet or a painter with the help of it, there are also numerous problems and gaps associated with its application. Arguably, the most challenging of them being the copyrightability of AI-generated works.

Due to the fact that several parties take part in the creation of any AI-generated work, including AI itself, the company behind AI, and a user providing instructions to AI by way of textual 'prompts' or otherwise, the question of copyrightability is inherent in the nature of generative AI. Who is the author of a poem generated by ChatGPT? What about a painting by Midjourney or Stable Diffusion? This thesis will explore the approaches of the US, the UK, and China in answering the questions posed.

First, this thesis delves deeper into the notion of AI and its impact on copyright to provide a brief introduction to the technology itself and the origins of the challenges introduced by it. Owing to the peculiar nature of generative AI, certain elements of copyright protection might

<sup>&</sup>lt;sup>1</sup> See, e.g., https://www.headshotpro.com/; https://prophotos.ai/.

<sup>&</sup>lt;sup>2</sup> See, e.g., https://scite.ai/; https://consensus.app/.

not be as easily reconciled with its essence, the most prominent of them being the aspect of creativity and human input necessary for almost any work to be eligible for copyright protection.

The main body of the thesis is divided into three chapters, each of which is dedicated to examining the approach to copyrightability of AI-generated works in a particular jurisdiction. Each chapter is divided into two subchapters, the one exploring the legislative framework surrounding the copyrightability of AI-generated works and the other dealing with judicial interpretations of the relevant legal provisions in case law. The analysis consists of scrutinizing copyright laws and regulations, guidelines and compendiums, court decisions, and legal doctrine in the US, the UK, and China in order to answer the question of the copyrightability of AI-generated works in each of the jurisdictions, recognizing the core elements pertaining to granting copyright protection over a work and acknowledging impediments on the way to if any.

This thesis concludes by holistically putting together the highlighted approaches emphasizing their similarities, differences, effect on economic development, and possibilities for unification. Based on the emphasized elements a proposal for the introduction of an international standard outlining the baseline for AI-generated works copyrightability is made. Such an international instrument or amendments to existing international treaties might boost innovation and economic growth by creating a level playing field for AI developers and enthusiasts around the world, thereby incentivizing them to develop further and safeguarding the fruits of their labor accordingly.

#### 1. IMPACT OF ARTIFICIAL INTELLIGENCE ON COPYRIGHT

The 1950s are usually regarded as the time AI was officially born when researchers first began understanding how machines could simulate certain aspects of human intelligence.<sup>3</sup> The most crucial moment starts with Alan Turing's seminal paper "Computing Machinery and Intelligence,"<sup>4</sup> which explores the fundamentals of AI, including the ways in which intelligence can be tested and how machines can be programmed to self-learning.<sup>5</sup>

Even though almost an entire century has passed since the publication of Alan Turing's work, there is still yet to be a general concept for AI. However, according to one of the commonly accepted definitions of Nils J. Nilsson, a founding researcher in the discipline of AI, "artificial intelligence is that activity devoted to making machines intelligent, and intelligence is that quality that enables an entity to function appropriately and with foresight in its environment."<sup>6</sup> Based on that precise definition, we can draw that machine learning as an activity essentially aims at achieving a certain level of independence in machines' operation. Naturally, the machine is independent only to some extent in the sense that there is always an operator behind that machine who controls it and is able to turn it off at any minute. Nevertheless, in my opinion, this concept of quasi-independence is the main contributor to the challenges AI has brought into the world of IP, since the machine is not creative per se, creativity (or its surrogate) is achieved over the course of time thanks to machine learning. Which, if done properly, allows

<sup>&</sup>lt;sup>3</sup> Minh Thi, 'Copyright Protection for Works Created by AI Technology under the EU Law and Vietnamese Law' (2023) 55 Review of European and Comparative Law.

<sup>&</sup>lt;sup>4</sup> Alan M Turing, 'Computing Machinery and Intelligence' (1950) LIX Mind 433.

<sup>&</sup>lt;sup>5</sup> Peter Stone and others, 'Artificial Intelligence and Life in 2030' (Stanford University 2016) One Hundred Year Study on Artificial Intelligence: Report of the 2015 Study Panel <a href="https://issuu.com/rpodcoworkingspace/docs/artificial\_intelligence\_and\_life\_in\_2030\_standford">https://issuu.com/rpodcoworkingspace/docs/artificial\_intelligence\_and\_life\_in\_2030\_standford</a>> accessed 1 March 2024.

<sup>&</sup>lt;sup>6</sup> Nils J Nilsson, *The Quest for Artificial Intelligence* (1st edn, Cambridge University Press 2009) <a href="https://www.cambridge.org/core/product/identifier/9780511819346/type/book">https://www.cambridge.org/core/product/identifier/9780511819346/type/book</a>> accessed 1 March 2024.

the machine to act with as little guidance from a human as a single press of a button, while resembling human behavior to the arguably fullest extent possible.

In the meantime, human intelligence and creativity are innate. A baby does not need any instructions from parents to, for instance, place the toys in a particular order as if there is a story behind them, it happens naturally due to the inner artistic expression requiring a way out. However, it does not mean that humans as creative creatures do not need any assistance and are completely on their own in their artistic expression. From the dawn of time, humans have been on the quest to devise the handiest tools for both getting food for their tribe and decorating their cave home, e.g., rock painting. Fast-forward to today and now hardly can anyone imagine a writer coming up with stories and not transferring them on paper, trying to remember all of them by heart instead. Or a painter describing to the audience their imaginary painting without fixing it in a tangible medium and showing it. A pen and a sheet of paper have become essential tools for us to unleash and give way to our creativity.

Nonetheless, what distinguishes a painter with a pen and an engineer or a user with a generative AI program is the level of control. Some scholars have gone as far as to conclude that with such advanced generative AI systems that we have nowadays the results of their creation cannot be protected by copyright at all due to the fact that humans have lost control of the creative process.<sup>7</sup> That is why some researchers advocate for a special neighboring rights approach to protect "authorless" AI-generated works against misappropriation.<sup>8</sup> However, we should ask ourselves: is it indeed the case? Or despite the ever-increasing role AI plays in the creative process, the amount of human control left still allows for AI-generated output to qualify for

<sup>&</sup>lt;sup>7</sup> Daniel J Gervais, 'The Machine As Author' (2019) 105 Iowa Law Review 2053.

<sup>&</sup>lt;sup>8</sup> Martin Senftleben and Laurens Buijtelaar, 'Robot Creativity: An Incentive-Based Neighboring Rights Approach' (1 October 2020) <a href="https://papers.ssrn.com/abstract=3707741">https://papers.ssrn.com/abstract=3707741</a> accessed 1 March 2024.

copyright protection?<sup>9</sup> Is it a shared, universal approach among the nations, or there are differences present in that regard between various legal systems of today?

Surprisingly, these are not entirely new questions. As early as the 1960s scholars have tried to put their finger on inquiries related to computer-generated works.<sup>1011</sup> With the rise of generative AI, machine learning techniques in particular, the issue has gained momentum and inspired a vast new body of legal scholarship in recent years.<sup>1213</sup> This shows the high level of engagement this topic reached and the large number of different viewpoints shared within the scientific and legal communities.

Creating works using AI has crucial implications for copyright law. Traditionally, assigning copyright in computer-generated works was not a tough task because the program or an algorithm were merely tools that assisted in the creative process, very much resembling a pen and a piece of paper. In other words, a pen and a piece of paper can never outshine the human using them, they can only act as media for fixing the human's or anyone else's ideas.

However, again, owing to the advancements of AI and the proliferation of generative AI, the computer program is no longer just a tool. In fact, it independently makes a lot of the decisions indispensable in the creative process without human intervention<sup>14</sup>. For example, Midjourney

<sup>&</sup>lt;sup>9</sup> P Bernt Hugenholtz and João Pedro Quintais, 'Copyright and Artificial Creation: Does EU Copyright Law Protect AI-Assisted Output?' (2021) 52 IIC - International Review of Intellectual Property and Competition Law 1190.

<sup>&</sup>lt;sup>10</sup> ibid.

<sup>&</sup>lt;sup>11</sup> See, e.g., Karl F Fromm, 'Der Apparat Als Geistiger Schöpfer' [1964] GRUR 304; Karl F Milde, 'Can a Computer Be and Author or an Inventor?' (1969) 51 Journal Of The Patent And Trademark Office Society 378; Stephen Hewitt, 'Protection of Works Created by the Use of Computers' [1983] ew LJ Institute of Engineering & Technology 133.

<sup>&</sup>lt;sup>12</sup> Hugenholtz and Quintais (n 9).

<sup>&</sup>lt;sup>13</sup> See, e.g., Andres Guadamuz, 'Artificial Intelligence and Copyright' (2017) 5 WIPO Magazine 14; Ana Ramalho, 'Will Robots Rule the (Artistic) World? A Proposed Model for the Legal Status of Creations by Artificial Intelligence Systems' (13 June 2017) <a href="https://papers.ssrn.com/abstract=2987757">https://papers.ssrn.com/abstract=2987757</a>> accessed 5 May 2024; Gervais (n 7).

<sup>&</sup>lt;sup>14</sup> Guadamuz (n 13).

only needs a textual prompt, it might be no more than a single word, to generate an entire relatively detailed image.

That being said, one could argue that this control (quasi-independence) dilemma is not as important. However, the manner in which the law addresses new types of generative AI creativity could have far-reaching commercial implications. Generative AI has already been and continues to be employed to generate works in the fields of journalism, music, and gaming.<sup>1516</sup> These works could theoretically be deemed free of copyright since there is no human author behind their creation. Therefore, they could be lawfully used by anyone just like the works considered public domain. But what about the companies developing the AI programs used and those selling the works? Such a turn of events would undoubtedly be development of a generative AI program in order to generate a great soundtrack for a movie or develop an algorithm to make non-playable characters in a videogame less scripted, only to end up with a song and a code that are not protected by law and can be used by anyone in the world without any obligation to pay to the developers or the investors.<sup>17</sup>

On the one hand, while it is complicated to evaluate the precise impact this AI conundrum will have on the creative economy, it may well have a chilling effect on investment in automated systems. In a scenario when machine learning engineers and software developers doubt whether AI-generated creations are copyrightable, there is no incentive to invest in such systems.<sup>18</sup>

 <sup>&</sup>lt;sup>15</sup> Felix M Simon, 'Artificial Intelligence in the News: How AI Retools, Rationalizes, and Reshapes Journalism and the Public Arena' (Columbia Journalism Review 2024) Tow Report <a href="https://www.cjr.org/tow\_center\_reports/artificial-intelligence-in-the-news.php/">https://www.cjr.org/tow\_center\_reports/artificial-intelligence-in-the-news.php/</a>> accessed 10 March 2024.
 <sup>16</sup> Despoina Farmaki, 'The Player, the Programmer and the AI: A Copyright Odyssey in Gaming' (2023) 18 Journal of Intellectual Property Law and Practice 920.

<sup>&</sup>lt;sup>17</sup> ibid.

<sup>&</sup>lt;sup>18</sup> Guadamuz (n 13).

On the other hand, in light of the widely accepted objective of fostering innovation, it is only fair to provide machine learning engineers and developers a way of capitalizing on their AI-generated creations so as not to stifle their further development.

Thus, AI has had a disruptive impact on copyright so far, undermining its very foundation and core concepts of creativity, originality, and human intervention. The need for addressing such changes has been recognized by the international community. A number of states have already introduced their custom rules of assigning (or not assigning) copyright to AI-generated works. The most prominent approaches in that respect are going to be explored in the next chapters of this thesis.

### 2. COPYRIGHTABILITY OF AI-GENERATED WORKS IN THE US

#### 2.1. Overview of the US copyright laws

In the United States, the basis for copyright and IP protection in general is laid down by the Constitution of the United States of America of 1787 (the 'US Constitution'). Article I, Section 8, Clause 8 of the US Constitution is colloquially referred to as the 'copyright clause' and reads "[The Congress shall have Power] To 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." This fact naturally presupposes the level of importance and value associated with the legal protection of IP.

Therefore, the regulation of copyright protection in the US stems from the authority given by the US Constitution and consists of the Copyright Act of 1976 (the 'Copyright Act') and amendments to it. Additionally, there is a special industry regulation, including the Digital Millennium Copyright Act of 1998, that is not specifically tailored to AI, thus, this thesis will not refer to them specifically. A consolidated version of these legislative instruments constitutes Title 17 of the United States Code (the 'USC').

First, it is vital to emphasize that there is no specific provision regarding AI- or computergenerated works in the US copyright law.

According to 17 USC § 102 copyright protection is granted to "original works of authorship fixed in any tangible medium of expression". Such works of authorship include, inter alia, literary, musical, and audiovisual works.

Interestingly, neither the US Constitution nor the Copyright Act explicitly defines who (or what) might be considered an "author". However, the US Copyright Office has recently put the record straight in light of the growing body of case law on the matter and declared that it

recognizes copyright solely in works "created by a human being"<sup>19</sup>. Such a statement is found in the latest edition of the Compendium of the US Copyright Office Practices. Even though this document is an internal manual, meaning that it does not have the force of a statute and does not override any legislative provisions, it explains the rationale of the US Copyright Office behind registering or denying registration of copyrights.

In addition, the Copyright Act provides for the notion of a "work-for-hire" and the procedure for assigning copyright in such works. Under 17 USC § 101 a work made for hire is defined as "a work prepared by an employee within the scope of his or her employment" or "a work specially ordered or commissioned for use as a contribution to a collective work, as a part of a motion picture or other audiovisual work, as a translation, as a supplementary work, as a compilation, as an instructional text, as a test, as answer material for a test, or as an atlas".

Concerning the rules for assigning copyright in works-for-hire, under 17 USC § 201(b) "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, and, unless the parties have expressly agreed otherwise in a written instrument signed by them, owns all of the rights comprised in the copyright". If we apply this norm to a situation where an AI-generated work is created within the scope of employment or is commissioned, the copyright in the work would most likely be assigned to the employer or commissioning party and such party would be deemed an author.

# 2.2. Analysis of the US judgments on the copyrightability of AI-generated works

The US as a common law jurisdiction has had plenty of precedents regarding the copyrightability of AI-generated works. While the legislative provisions discussed earlier in

<sup>&</sup>lt;sup>19</sup> 'Compendium of U.S. Copyright Office Practices' (US Copyright Office 2021) § 101 3d ed.

this chapter might not give the full picture of the state of the art with respect to AI copyright, US court judgments leave practically no ambiguity on the matter.

One of the pioneering cases relevant to the issue of non-human authorship under US copyright law is undoubtedly *Naruto v Slater*<sup>20</sup>. In this case, the key legal issue was the possibility of extending the notion of authorship to encompass non-human authors, more precisely, whether a monkey that took a series of photos ('selfies') could be considered an author of the photos in question and be assigned copyright for them respectively under US law. The Ninth Circuit Court of Appeals ultimately ruled that animals cannot hold copyright under US law, and therefore, the photograph was considered public domain<sup>21</sup>.

Moreover, a fairly recent lawsuit of *Thaler v Perlmutter*<sup>22</sup> challenged the human authorship paradigm once again in the context of works allegedly authored by AI. In June 2022, Stephen Thaler brought an action against the US Copyright Office for denying his application to register a visual artwork titled "A Recent Entrance to Paradise" that, according to him, was produced autonomously by an AI program called the Creativity Machine. When substantiating his claims, Thaler argued that human authorship is not required by the Copyright Act. This, as discussed earlier in this chapter, is true if you construe the legislative provisions textually without any reference to case law or guidelines. However, a district court granted summary judgment in favor of the US Copyright Office and ruled that "human authorship is an essential part of a valid copyright claim"<sup>23</sup> reasoning that only human authors need copyright as an incentive to create works.<sup>24</sup>

<sup>&</sup>lt;sup>20</sup> Naruto v Slater [2018] 9th Cir 888, 418 F3d.

<sup>&</sup>lt;sup>21</sup> Alesia Zhuk, 'Navigating the Legal Landscape of AI Copyright: A Comparative Analysis of EU, US, and Chinese Approaches' [2023] AI and Ethics <a href="https://link.springer.com/10.1007/s43681-023-00299-0">https://link.springer.com/10.1007/s43681-023-00299-0</a> accessed 10 April 2024.

<sup>&</sup>lt;sup>22</sup> Thaler v Perlmutter [2023] DDC 1:2022cv01564.

<sup>&</sup>lt;sup>23</sup> ibid.

<sup>&</sup>lt;sup>24</sup> Congressional Research Service, 'Generative Artificial Intelligence and Copyright Law' (2023) CRS Legal Sidebar <a href="https://crsreports.congress.gov/product/pdf/LSB/LSB10922">https://crsreports.congress.gov/product/pdf/LSB/LSB10922</a>> accessed 15 March 2024.

Nonetheless, even assuming that the work requires a human author in order to be copyrightable, works created by humans using AI are supposed to be entitled to copyright protection, depending on the nature of human involvement in the creative process. Notwithstanding the aforementioned, the latest copyright proceedings concerning the graphic novel "Zarya of the Dawn"<sup>25</sup> and the subsequent Copyright Registration Guidance<sup>26</sup> issued by the US Copyright Office showcase that the US Copyright Office is unlikely to find the necessary human author where AI generates works based on text prompts from a user.<sup>27</sup>

In September 2022, Kris Kashtanova filed an application to register copyright for a graphic novel "Zarya of the Dawn" illustrated with images generated by Midjourney in response to text inputs. However, she did not disclose the origins of the illustrations at the time of application. The US Copyright Office registered the copyright thereafter. But in October 2022, the US Copyright Office initiated cancellation proceedings after discovering that the images were actually created using AI and Kashtanova did not disclose this fact. Kashtanova claimed that the illustrations were created via "a creative, iterative process"<sup>28</sup>, "working with the computer to get closer and closer to what I wanted to express"<sup>29</sup>. Eventually, the US Copyright Office ruled that the images were not copyrightable since it was Midjourney that authored the "visual material", not Kashtanova. In the aftermath of that decision, in March 2023, the US Copyright Office released a copyright registration guidance with respect to works containing AI-generated content (the 'Copyright Registration Guidance'), according to which when AI

<sup>&</sup>lt;sup>25</sup> US Copyright Office from Robert J Kasunic, 'Zarya of the Dawn (Registration # VAu001480196)' (2023).
<sup>26</sup> 'Copyright Registration Guidance: Works Containing Materials Generated by Artificial Intelligence' (US Copyright Office 2023) Rule 88 FR 16190 <a href="https://www.federalregister.gov/documents/2023/03/16/2023-05321/copyright-registration-guidance-works-containing-material-generated-by-artificial-intelligence">https://www.federalregister.gov/documents/2023/03/16/2023-05321/copyright-registration-guidance-works-containing-material-generated-by-artificial-intelligence</a>> accessed 15 March 2024.

<sup>&</sup>lt;sup>27</sup> ibid.

<sup>&</sup>lt;sup>28</sup> US Copyright Office from Kasunic (n 25).

<sup>&</sup>lt;sup>29</sup> ibid.

"determines the expressive elements of its output, the generated material is not the product of human authorship"<sup>30</sup>.

Despite the decision of the US Copyright Office, some commentators still assert that certain AI-generated works should receive copyright protection. The main argument in that regard is comparing the use of AI to any other tool that human beings have used to create copyrighted works.<sup>31</sup> For instance, Kashtanova's attorneys cited the 1884 case *Burrow-Giles Lithographic Co. v Sarony*<sup>32</sup> in their response to the US Copyright Office, after which it has been generally accepted that photographs can be entitled to copyright protection provided that the photographer makes decisions regarding creative elements such as composition, arrangement, and lighting. Respectively, generative AI programs could also be seen as a new tool equivalent to the camera.<sup>33</sup>

Nonetheless, the US Copyright Office rejected the photography analogy and questioned whether AI users exercise sufficient creative control in order for AI to be considered merely a tool. In Zarya of the Dawn case, the US Copyright Office claimed that Midjourney was not "a tool that [] Kashtanova controlled and guided to reach [their] desired image" since it "generates images in an unpredictable way"<sup>34</sup>. The US Copyright Office respectively compared the AI user to "a client who hires an artist" and provides that artist with solely "general directions"<sup>35</sup>. The US Copyright Office's Copyright Registration Guidance mentioned earlier similarly claims that "users do not exercise ultimate creative control over how [generative AI] systems interpret prompts and generate materials"<sup>36</sup>. On the contrary, Kashtanova's attorneys were

<sup>&</sup>lt;sup>30</sup> 'Copyright Registration Guidance: Works Containing Materials Generated by Artificial Intelligence' (n 26).

<sup>&</sup>lt;sup>31</sup> 'Public Views on Artificial Intelligence and Intellectual Property Policy' (US Patent and Trademark Office 2020) <https://www.uspto.gov/sites/default/files/documents/USPTO\_AI-Report\_2020-10-07.pdf> accessed 15 March 2024; Congressional Research Service (n 24).

<sup>&</sup>lt;sup>32</sup> Burrow-Giles Lithographic Company v Sarony [1884] US Supreme Court 111 US 53.

<sup>&</sup>lt;sup>33</sup> US Copyright Office from Kasunic (n 25).

<sup>&</sup>lt;sup>34</sup> ibid.

<sup>&</sup>lt;sup>35</sup> ibid.

<sup>&</sup>lt;sup>36</sup> 'Copyright Registration Guidance: Works Containing Materials Generated by Artificial Intelligence' (n 26).

assured that the Copyright Act does not require such demanding creative control, drawing attention to the fact that some photographs and modern art rest upon a degree of eventuality.<sup>3738</sup>

In spite of the fact that according to the US Copyright Office AI-generated works are clearly and unambiguously not copyrightable, the issue remains unresolved. Since copyright registration applicants may bring an action in US district court to challenge the US Copyright Office's decisions to deny copyright registration, it is still unclear whether federal courts will share the US Copyright Office's stance and uphold all of its decisions. Although the US Copyright Office takes note of the fact that courts give weight to the US Copyright Office's experience and expertise in the field, they are not bound by and will not necessarily adopt its interpretations of the Copyright Act.<sup>39</sup>

In conclusion, after carefully scrutinizing the Copyright Act, the guidelines given by the US Copyright Office, and the relevant case law, the answer to the issue of copyrightability of AI-generated works under the US copyright law may seem apparent at first: AI-generated works are not copyrightable. The main reason for such a stance is the human authorship requirement strongly advocated for by the US Copyright Office and considering AI not as a tool, but rather as an independent creative force. However, considering the fact that federal courts are not bound by the interpretations of legislative provisions given by the US Copyright Office, there is still a chance of them disagreeing with its viewpoint in a situation where an alleged 'author' is willing to challenge the US Copyright Office's refusal to register copyright in their AI-generated work. Nonetheless, the state of the art remains: AI-generated works generally do not qualify for copyright protection under US copyright law.

**CEU eTD Collection** 

<sup>&</sup>lt;sup>37</sup> ibid.

<sup>&</sup>lt;sup>38</sup> Congressional Research Service (n 24).

<sup>&</sup>lt;sup>39</sup> ibid.

#### 3. COPYRIGHTABILITY OF AI-GENERATED WORKS IN THE UK

#### 3.1. Overview of the UK copyright laws

The UK copyright legislation is one of the few that explicitly refers to a notion of computergenerated works and distinguishes them from more traditional means of artistic expression. The UK Copyright Designs and Patents Act 1988 (the 'CDPA') in its Section 178 provides a definition of "computer-generated" in respect of a work, according to which "it means that the work is generated by computer in the circumstances such that there is no human author of the work".

Concerning the question of authorship, Section 9(3) CDPA designates that "the author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken.". The period of protection, in the absence of a human author, is counted from the date the work was created and constitutes 50 years.

It is worth mentioning that at the time of the CDPA proposal in 1987, Lord Young of Graffham, the Secretary of State for Trade and Industry, indicated when debating the Bill that the statute in question is "the first copyright legislation anywhere in the world which attempts to deal specifically with the advent of artificial intelligence"<sup>40</sup>.

However, even though at first glance the copyrightability of AI-generated under UK copyright law is asserted and decided upon within the framework of computer-generated works, it is still unclear how and under which conditions this special regime could be applied transversally to AI-generated works.<sup>41</sup>

<sup>&</sup>lt;sup>40</sup> Lord Young of Graffham, 'Copyright, Designs And Patents Bill HI' < https://hansard.parliament.uk/Lords/1987-11-12/debates/9b959a7b-172a-4e28-8676-1a6747b0f370/CopyrightDesignsAndPatentsBillHI> accessed 5 May 2024.

<sup>&</sup>lt;sup>41</sup> Ramalho (n 13).

The most controversial thing in this regard is the interpretation of the term "arrangements" and determining the person responsible for them. Such a person might include the user who comes up with the instructions for the AI, the programmer/machine learning engineer, the person who sells or produces the software in question, or an investor.<sup>42</sup> Or even more broadly, the person training the AI or the person customizing the software.<sup>43</sup> It can also be a combination of them, depending on the work at issue and the stance of the interpreter in regard to the meaning of "person" encompassing more than one person, which is debatable. All these options are possible owing to the fact that the term "arrangements" essentially corresponds to organizing or preparing something that is indispensable for the creation of the work, in other words, the efforts, without which the work could not have been created.<sup>44</sup> Moreover, the determination of the person responsible for the arrangements has to be evaluated on a case-by-case basis, taking into account various factors, such as the initiative to create the work, the proximity to the final act of creation since the closer the participation of a person to the final creation, the more likely this person is in charge of the arrangements necessary for the creation of the work, or the extent to which the arrangements are at the helm of the creation of the work (in that situation, the emphasis will likely be put on the operation of the software used).<sup>45</sup>

Thus, the current legislative framework in the UK, while allowing for the copyright protection of AI-generated works, still leaves the main question – the authorship dilemma – open, since the instructions given by the CDPA to determine the author of a computer-generated work are arguably vague and insufficient.

<sup>&</sup>lt;sup>42</sup> Lionel Bently and Brad Sherman, Intellectual Property Law (Oxford University Press 2014).

<sup>&</sup>lt;sup>43</sup> Jani McCutcheon, 'Curing the Authorless Void: Protecting Computer-Generated Works Following IceTV and Phone Directories' (2013) 37 Melbourne University Law Review 46.

<sup>&</sup>lt;sup>44</sup> ibid.

<sup>&</sup>lt;sup>45</sup> ibid.

# 3.2. Analysis of the UK judgments on the copyrightability of AI-generated works

To this date, there are, unfortunately, no British court decisions that had to deal directly with the problem of the copyrightability of AI-generated works. What is more, computer-generated works have only been brought up once in the English courts<sup>46</sup> in the case of *Nova Productions v Mazooma Games*<sup>47</sup>.

Even though it is debatable to what extent the findings of the present case could be extrapolated and applied to AI-generated works, it is still pertinent to discuss the conclusions reached by the Court since they provide at least some level of guidance as to the authorship determination under Section 9(3) CDPA.

*Nova Productions v Mazooma Games* was adjudicated in 2006 by the High Court of Justice (EWHC). The case revolved around an alleged copyright infringement on the part of Mazooma Games (Mazooma) and a couple of other companies related to a coin-operated game based on pool called 'Pocket Money', designed, manufactured, and sold by Nova Productions Limited (Nova). Nova was seeking protection over the bitmap files and the composite frames of the game, which appear on the screen generated by a computer program. These bitmaps and frames are what devises the visual output of the game that the player sees.

The Court ruled that the composite frames of the game were computer-generated works under the CDPA and, therefore, qualify for copyright protection. What concerns identifying the author of the composite frames, the main legal issue at hand, as expected, was determining by whom the arrangements necessary for the creation of the composite frames in question had been undertaken.

<sup>&</sup>lt;sup>46</sup> Jyh-An Lee, 'Computer-Generated Works under the CDPA 1988' [2021] Oxford University Press <a href="https://papers.ssrn.com/abstract=3956911">https://papers.ssrn.com/abstract=3956911</a>> accessed 15 May 2024.

<sup>&</sup>lt;sup>47</sup> Nova Productions Ltd v Mazooma Games Ltd [2006] EWHC (CH) 24.

The composite frames were generated by the computer program developed by Mr. Jones (the programmer). However, the player (the user) also influenced the appearance of the frames by its strategic decisions concerning the ways the game could be played. For instance, if the player does not decide to strike the cue ball in a particular direction, there will be no corresponding composite frame generated by the program of such strike. The programmer is not responsible for the way users play the game, thus, it cannot envision or have any impact on the precise appearance of the composite frames generated.

Having examined the conditions designated by the CDPA and the technical details pertaining to the generation of the composite frames, the Court ultimately considered the programmer (the person who programmed and designed the game) to be the person by whom the necessary arrangements were undertaken and, therefore, the author of the composite frames. The Court based its decision on the fact that Mr. Jones "devised the appearance of the various elements of the game and the rules and logic by which each frame is generated and he wrote the relevant computer program"<sup>48</sup>.

What concerns the player's input, the Court did acknowledge the impact on the composite frames by the payer's input, however, expressly refused to grant authorship to the user. According to the Court, although the visual appearance of certain elements on the screen is undoubtedly dependent on the way the game is played, "the player's input is not artistic in nature, and he has contributed no skill or labor of an artistic kind"<sup>49</sup> to the frame images.

Despite the fact that I personally agree with the EWHC's qualification in this case, when trying to apply its findings to the world of AI-generated works, one inevitably comes to the conclusion that the extent and effect of user input in a generative AI setting is vastly different from that of

<sup>&</sup>lt;sup>48</sup> ibid.

<sup>&</sup>lt;sup>49</sup> ibid.

a player merely playing a videogame. Therefore, the potential authors will have to be determined on a case-by-case basis, which does not contribute to the legal certainty necessary for a properly functioning legal framework. Additionally, it would probably be unfair to assign copyright over AI-generated works to the developer behind the software, when all of the creative decisions were taken by the user and the developer has no power over the final product.

To sum up, in the UK AI-generated works can be regarded as copyrightable under the computer-generated works model introduced by the CDPA. The works are considered computer-generated when they are created by a computer and there is no human author behind them. In the absence of a traditional author, the CDPA assigns copyright over a computer-generated work to the person who undertook the arrangements necessary for the creation of the work. Owing to the vague nature of these requirements, there is no straightforward answer to the question of authorship when it comes to an AI-generated work. However, as illustrated by the only British case that dealt with computer-generated works, it is most likely to be either the programmer who developed the software or the user whose input formed the final work.

#### 4. COPYRIGHTABILITY OF AI-GENERATED WORKS IN CHINA

# 4.1. Overview of China's copyright laws

The main source of China's copyright law is the Copyright Law of China 2010 (the 'CLC'). Similar to the US Copyright Act, the CLC does not contain any specific provisions regarding AI- or computer-generated works and their copyright status.

Interestingly, the CLC itself does not provide a definition of what the protected 'work' is. In its Article 3, it only lists the kinds of works that might be granted protection. Among those are works of literature, art, natural science, social science, engineering technology, and the like created in the following forms: (1) written works; (2) oral works; (3) musical, dramatic, quyi ("melodious art"), choreographic and acrobatic artworks; (4) works of fine art and architecture; (5) photographic works; (6) cinematographic works and works created in a way similar to cinematography; (7) drawings of engineering designs and product designs, maps, sketches, and other graphic works as well as model works; (8) computer software; (9) other works as provided in laws and administrative regulations.<sup>50</sup> Therefore, the list of works is not exhaustive and subject to further amendments and updates by laws and regulations.

The absence of a definition of a work in the CLC is cured by the Regulations for the Implementation of the Copyright Law of the People's Republic of China. Under Article 2 of this implementing act the term "work" as referred to in the CLC means original intellectual achievements in the fields of literature, art, and science that can be reproduced in a tangible form.<sup>51</sup> From this definition, we can identify the elements of a work qualifying for copyright

<sup>&</sup>lt;sup>50</sup> Yong Wan and Hongxuyang Lu, 'Copyright Protection for AI-Generated Outputs: The Experience from China' (2021) 42 Computer Law & Security Review 105581.

protection in China, which has to be: (1) original, (2) an intellectual achievement, (3) belonging to one of the defined domains, and (4) capable of being reproduced in a tangible form.

In November 2020 the CLC was modified with the amendments entering into force on June 1, 2021. These modifications altered the definition of a work given by the aforementioned implementing act and inserted the new definition into the CLC directly. The amended Article 3 of the CLC now defines works as "original intellectual achievements in the fields of literature, art, and science that can be presented in a certain form"<sup>52</sup>. This illustrates a shift to a more flexible approach in regard to the reproduction requirement. According to the previous version of the CLC, in order for an intellectual achievement to be considered a work it had to be capable of being reproduced in a tangible form, whereas currently just a particular form, not necessarily a tangible one, is sufficient.

Additionally, the amended CLC in its miscellaneous provision now refers to "other intellectual achievements that meet the characteristics of works" instead of "other works as provided in laws and administrative regulations". This modification demonstrates an open attitude towards the categories of copyrightable subject matters under the copyright law system of China.<sup>53</sup> Nonetheless, these amendments still did not address the question of AI-generated works, therefore, leaving their copyrightability status to be decided based on the general characteristics provided by the CLC.

Therefore, China's copyright laws do not provide any guidance as to the copyrightability of AI-generated works specifically. They lay down general criteria for an object to be capable of copyright protection, which are originality, the object being an intellectual achievement in a particular area, and being presented in a certain form. Furthermore, the history of amendments

<sup>&</sup>lt;sup>52</sup> ibid.

<sup>53</sup> ibid.

to the CLC serves as proof of China's readiness to broaden copyright protection and its desire to grant it to a vast body of creations.

# 4.2. Analysis of China's judgments on the copyrightability of AI-generated works

China's case law on the copyrightability of AI-generated works is particularly intriguing due to the fact that the stance of China's judges on the matter is not as rigid as that of, for example, the US judges, and has transformed drastically over the years.

Initially, China's response to the question of the copyrightability of AI-generated works was unambiguously negative. In April 2018, the Beijing High People's Court published the Guidelines for the Trial of Copyright Infringement Cases in the People's Republic of China<sup>54</sup> (the 'Guidelines'), according to Article 2.1 of which in addition to the characteristics of a copyrightable work under the CLC there is another condition for granting copyright protection – "creation by natural persons". Subsequently, the judges of the Beijing High Court interpreted the provisions of the Guidelines commenting on the nature of the results generated by AI. Judge Qi Lei, who participated in the drafting of the Guidelines, reiterated that AI-generated content cannot constitute a copyrightable work under the CLC.<sup>55</sup> She mentioned two reasons for such a restrictive qualification.

First, as she explained, the act of creation is concerned with giving form to thoughts and emotions and involves a very complex psychological level of behavior. Therefore, objects created by beings other than humans do not demonstrate such a level of reflection and do not

<sup>&</sup>lt;sup>54</sup> Guidelines for the Trial of Copyright Infringement Cases in the People's Republic of China 2018.

<sup>&</sup>lt;sup>55</sup> Zhe Dai and Banggui Jin, 'The Copyright Protection of AI-Generated Works under Chinese Law' (2023) 13 Juridical

<sup>&</sup>lt;https://www.tribunajuridica.eu/arhiva/An13v2/5.%20Dai%20Zhe%20and%20JIN%20Banggui.pdf> accessed 20 May 2024.

belong to the category of works as intended by China's copyright law.<sup>56</sup> Thus, they cannot enjoy the protection laid down by it.

Second, the legislative purpose of China's copyright law is to incentivize the creation of works. Since neither animals nor machines can be encouraged by copyright protection in any way, solely humans are targeted by the CLC<sup>57</sup>.

Despite the fact that this conclusion is not derived from a formal judgment, the Guidelines play a crucial role in China's judicial field. They are followed not only by the courts in the Beijing area but all across the country. Furthermore, the first judgment related to AI-generated works was rendered shortly after the release of the Guidelines and was consistent with it.<sup>58</sup>

This was the case of *Feilin v Baidu*<sup>59</sup> adjudicated by the Beijing Internet Court. In September 2018, Beijing Feilin Law Firm (Feilin) posted the "Analysis Report on Judicial Big Data of the Entertainment Industry – Film Volume, Beijing" written with the help of a statistical data software known as the Wolters Kluwer Database on its official WeChat accounts. The next day, an internet user published the report without permission, with only several omissions (the preface, retrieval overview, annual trend chart of the number of cases in the film industry, and the "note" part at the end were not included), on the Baijiahao platform operated by Beijing Baidu Netcom Science & Technology Co., Ltd (Baidu). Feilin sued Baidu in the Beijing Internet Court claiming that Baidu had infringed its right of authorship, right of integrity, and right of communication of information on networks.<sup>60</sup> The defendant argued that the report by

<sup>&</sup>lt;sup>56</sup> Qi Lei, 'Interpretation Series of the "Guidelines for the Trial of Copyright Infringement Cases" <a href="https://www.zhichanli.com/p/560259034">https://www.zhichanli.com/p/560259034</a> accessed 20 May 2024.

<sup>&</sup>lt;sup>57</sup> ibid.

<sup>&</sup>lt;sup>58</sup> Dai and Jin (n 55).

<sup>&</sup>lt;sup>59</sup> Feilin v Baidu [2018] Beijing Internet Court Jing 0491, MinChu No 239.

<sup>60</sup> ibid.

Feilin was not original, because it had been generated by the Wolters Kluwer Database and the CLC only protects creations of natural persons, not AI-generated content.

The Court decided to examine the graphic and textual parts of the reports separately. In order to rule on the originality requirement, the Court conducted an experiment entering various data into the Wolters Kluwer Database and comparing the results obtained. Eventually, they came to the conclusion that the graphs contained in both reports were not subject to copyright due to the absence of any differences in the results of the experiment except for the discrepancies in the data fed to the system. Regarding the written parts of the reports, the Court stated that they had sufficient originality to be recognized as written works.

However, in light of the Guidelines explored earlier in this subchapter, the Court held that originality alone is not enough for the work to be considered copyrightable. It must have also been created by a natural person. Due to the mechanics of the Wolters Kluwer Database, where a user enters keywords and clicks the Search and Visualization buttons, such a procedure cannot result in a creative work expressing the user's thoughts and feelings. Therefore, the report does not fall within the category of work as provided for in the CLC.

Even though the viewpoint expressed by the Beijing Internet Court has been consistent with the Guidelines and illustrated prevalent views in the Chinese judicial community, it changed shortly, culminating in the ruling rendered in *Tencent v Yingxun*<sup>61</sup>, the second major AI copyright case in China.

In August 2015, the plaintiff Shenzhen Tencent Computer System Co Ltd (Tencent) published on the Tencent Securities website a financial review titled "Noon Review: The Index of Shanghai Stock Increased Slightly by 0.11% to 2671.93 Points, Led by Sectors Such as

<sup>&</sup>lt;sup>61</sup> Tencent v Yingxun [2019] Guangdong Shenzhen Nanshan District People's Court Yue 0305, MinChu No 14010.

Communication Operation and Petroleum Extraction" (the 'Stock Noon Review'), which was automatically generated by the Dreamwriter – an intelligent writing assistant developed by its affiliate company. There was a note attached at the end of the article acknowledging that it had been written by the Tencent robot Dreamwriter. On the very same day the Stock Noon Review was copied and posted without the plaintiff's permission by the defendant Shanghai Yingxun Technology Co. Ltd (Yingxun) on the "Internet Loan House" ("Wangdaizhijia") website operated by the defendant. Tencent brought an action against Yingxun in the Nanshan District Court of Shenzhen alleging that the behavior of Yingxun infringed on its right to communication through the information network.<sup>62</sup>

According to the Nanshan District Court, to determine whether the Stock Noon Review article constitutes a work, it is necessary to consider "whether it reflects the creator's individual choice, judgment and skills, and other factors"<sup>63</sup>. The Court thereafter held, however, that the automatic generation of the article by the Dreamwriter should not be regarded as the entire process of creation since the software cannot operate completely on its own. It ruled that the generation of the article required four steps: data service, triggering and writing, intelligent verification, and intelligent distribution.<sup>64</sup>

The Court held further that Tencent made arrangements and choices in terms of data input, themes expressed in the Stock Noon Review, and writing styles among other things, meaning that during the creation of the Stock Noon Review, the expression actually comes from a human creator's personalized choices and arrangements. Based on that, the Court concluded that the generation process employed by the Dreamwriter software met the conditions for copyright

<sup>&</sup>lt;sup>62</sup> Wan and Lu (n 50).

<sup>&</sup>lt;sup>63</sup> Tencent v Yingxun (n 60).

<sup>&</sup>lt;sup>64</sup> Dai and Jin (n 55).

protection, and the final output in the form of the Stock Noon Review constituted a protected literary work.<sup>65</sup>

The final judgment worth mentioning in the context of the evolution of the Chinese courts' attitude towards the copyrightability of AI-generated works is *Li v Liu*<sup>66</sup>, which was rendered fairly recently in November 2023 by the Beijing Internet Court.

The plaintiff in the proceedings generated an image of a woman using Stable Diffusion, an open-source text-to-image generative AI model developed by Stability AI, which creates images based on textual prompts entered by the user. The plaintiff posted the image on one of the Chinese social media platforms (Xiaohongshu) and later discovered that the defendant had published the same image on a different website as an illustration for an article without asking for permission from the plaintiff.

In determining whether the disputed image was copyrightable under China's law the Beijing Internet Court analyzed each of the criteria of copyright eligibility laid down by the CLC and explored in the previous subchapter: originality, the object being an intellectual achievement, a particular area the object belongs to and it having some form of expression. The Court attached particular importance to the "intellectual achievement" and "originality" elements.

As explained by the Court, "intellectual achievement" is the result of a human being's intellectual activities. In the present case, the plaintiff's intellectual activities are manifested from the conception to the final creation of the disputed image. With the help of Stable Diffusion, the plaintiff selected over 150 prompts, arranged them, and set specific parameters. He then continued to modify and adjust those prompts and parameters until the final image

<sup>65</sup> ibid.

<sup>&</sup>lt;sup>66</sup> Li v Liu [2023] Beijing Internet Court Jing 0491, Min Chu No 11279.

aligned with his conception. The aforementioned steps sufficiently signify that the disputed image was created as a result of the plaintiff's intellectual efforts.<sup>67</sup>

What concerns originality, according to the Court, it stems from the plaintiff's personalized choices and aesthetic judgment throughout the whole generation process. This included the selection and arrangement of the prompts and parameters together with the refinement of the final product. Therefore, such "intellectual achievements" transcended the mere "mechanical" ones that are devoid of originality.<sup>68</sup>

In conclusion, while China's copyright law is silent on the copyrightability of AI-generated works, the stance of the Chinese judiciary on the matter is largely approbatory. However, it has not been the case initially. The attitude of the Chinese courts has undergone major changes and evolved from disclaiming the copyrightability of AI-generated works completely as evidenced by the Guidelines and the ruling given by the Beijing Internet Court in *Feilin v Baidu* to not only acknowledging it but also assigning copyright over the work in question to the user behind it as demonstrated by the Nanshan District Court in *Tencent v Yingxun* and the Beijing Internet Court in *Li v Liu*.

<sup>&</sup>lt;sup>67</sup> Yuqian Wang and Jessie Zhang, 'Beijing Internet Court Grants Copyright to AI-Generated Image for the First Time' (*Kluwer Copyright Blog*, 2 February 2024) <a href="https://copyrightblog.kluweriplaw.com/2024/02/02/beijing-internet-court-grants-copyright-to-ai-generated-image-for-the-first-time/">https://copyrightblog.kluweriplaw.com/2024/02/02/beijinginternet-court-grants-copyright-to-ai-generated-image-for-the-first-time/</a> accessed 20 May 2024.
<sup>68</sup> ibid.

### CONCLUSION

As explored by this thesis, the US, the UK, and China's approaches to the copyrightability of AI-generated showcase three possible solutions to this dilemma. Each has its own policy considerations and a particular effect on economic development.

The US represents the most conservative and rigid stance. A thorough analysis of the US copyright legislation, the Compendium and Guidance given by the US Copyright Office, and the relevant case law has demonstrated that AI-generated works are not eligible for copyright protection in the US. It is primarily due to the human authorship requirement reinforced by both the US courts and the US Copyright Office. AI is viewed not as a tool, but rather as an independent creative force, meaning that there can be no human author behind AI creations according to the US Copyright Office. However, while the US Copyright Office's position is unambiguous, it is important to bear in mind that the guidelines issued by them do not bind federal courts, thus, it is possible that they might side with the human behind the AI-generated work in a situation where the human challenges the US Copyright Office's refusal of their copyright registration.

What concerns the UK, its regulation of computer-generated works has truly been groundbreaking at a time. Unlike the US, the UK CDPA specifically lists the works generated by a computer in the absence of a human author among copyrightable works. Although there is no notion of AI in that definition, AI-generated works can easily fit this mold, which makes them qualify for copyright protection in the UK. Nevertheless, regarding the authorship paradigm, the UK copyright law assigns authorship to the person responsible for the arrangements necessary for the creation of the work. Due to the vague nature of these instructions and the deficiency of the UK case law dealing with AI and copyright, there is no generally accepted answer to the issue of authorship of AI-generated works. The direction set

by the case law on computer-generated works suggests that the authorship over an AI-generated work is most likely to be assigned to either the developer behind the software or the user who prompted and thereby shaped the work.

China's approach to the copyrightability of AI-generated works is the most agile and usercentric out of the three analyzed jurisdictions. Despite the fact that China's copyright law does not mention computer- or AI-generated works specifically, the timeline of legislative changes and the evolution of court decisions on the matter show that China is willing to broaden the scope of copyright protection to encompass a larger body of works, including those generated by AI. Interestingly, China's attitude was completely different at the outset, since some of the criteria the work has to satisfy to qualify for copyright protection, in particular, originality and being an intellectual achievement, have traditionally been attributed to human beings exclusively, very much resembling the human authorship requirement in the US. However, the latest judgement of the Beijing Internet Court in *Li v Liu* set the record straight by proclaiming AI-generated works copyrightable under China's law and assigning copyright to the user behind the work.

In my view, the most reasonable and effective approach out of the three jurisdictions is the one utilized by China. Owing to the fact that according to China's current stance, AI-generated works should be accorded copyright protection, which is not the case in the US, China thereby encourages the creators to continue progressing and devising creative products, which will be protected from unauthorized use by law. Nonetheless, China's approach cannot be regarded as devoid of the influence of the moral theory of IP. By proclaiming the user, instead of the developer of the AI program used, China puts emphasis on the creative expression and the personality of the author, rather than the potential commercialization of the work, reinforcing the ideas behind the moral theory. Therefore, recognizing AI-generated works as copyrightable

and assigning copyright to the user behind the work follow both the moral and utilitarian theories of IP.

Thus, there is no consensus with regard to the copyrightability of AI-generated works among the nations. While it is true that not all AI creations might fall under the scope of traditional copyright protection due to a lack of creative expression of a human being behind the machine, it is vital to bear in mind that the alleged 'authors' of such 'non-creative AI creations' are highly unlikely to request any protection over them in the first place. It is common knowledge that the more detailed the instructions or prompts fed to AI are, the more unique and efficacious the output received is. And precisely for such AI creations, that are the result of meticulous calculations and enormously challenging creative decisions taken by the author, legal protection is sought. In my opinion, such a patchwork of contradicting norms around the world prevents AI developers and enthusiasts from unleashing their full potential in terms of research and investment efforts due to them not being confident enough that the fruits of their labor will be protected at least in some shape or form.

The solution to this dilemma could be the introduction of an international standard for copyright protection over AI-generated works similar to the Berne Convention for the Protection of Literary and Artistic Works 1886 (the 'Berne Convention'). Such an international standard in the form of an international treaty or otherwise would outline the baseline for the copyright protection of AI-generated works that each participating state has to accord to AI-generated works. Obviously, I would advocate following the Chinese model of regulation in formulating concrete provisions of the treaty, but, taking into account, the diversity of viewpoints on AI-generated works as illustrated by this thesis and the rigidness of some of them, the starting point could be merely obligating the participating states to recognize the copyrightability of AI-generated works without specifying the particular parameters of the

protection. By taking the international regulation step-by-step, more states would be persuaded into participating in the treaty, which is the only way it would gain traction and achieve the stated objectives.

Such a "reduced" international instrument would contribute to the harmonization of AI copyright regulation around the globe without intimidating the most conservative nations in the international arena. Afterward, based on the experience and insights gained in the implementation process of the first version of the international instrument, amendments thereto could be initiated, establishing broader and more concrete provisions regarding the type and level of legal protection AI-generated works shall be granted. Eventually, much-needed clarity for AI developers and researchers would be reached, eliminating the patchwork of contradicting regulations worldwide. By following this path, the motivation to advance AI technology will be magnified, economic development will be incentivized, and innovation will be promoted on a global scale.

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