

# “You AI’n’t Seen Nothing yet” – Arguments against the Protectability of AI-generated Outputs by Copyright Law

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## I. Introduction

Law is a fiction, and copyright law is an excellent example for legal fictions.<sup>1</sup> All its norms, definitions, doctrines are created and regularly re-created by humans to serve metaphorical purposes.<sup>2</sup> At the same time, copyright law has its limits stemming from its roots, subjects, objects and purposes. The ultimate question of copyright law is nothing else than *why and to whom do laws assign copyright protection?*<sup>3</sup> And the short answer to these questions is that expressions of the human mind shall be protected for the benefit of individual creators and mankind in general. This shall serve as a starting point and the guiding light when assessing the impacts and guessing the future of copyright protection of outputs generated by Artificial Intelligence (AI).

The symbiosis of copyright protection and technological innovation dates back to centuries. In most cases, both society and the rights holders have profited from this symbiotic interconnection, as the new technologies were created for the sake of humanity, and the rights holders became entitled for compensation. On the other hand, disruptive technologies have made copyright law fragile. This fragility was further exaggerated by the delayed and occasionally ineffective legislative reactions. Likewise, users have always been more willing to take advantage of innovations rather than strictly following the provisions of copyright law. Unsurprisingly, copyright laws and rights holders usually tried to eliminate or, alternatively, to control new technologies.

Policy reports and scholarly papers on the protectability of computer generated contents were published as early as 1965.<sup>4</sup> While the intersection between AI and copyright law has been continuously discussed since then, it has become an extremely hot topic recently. Both the number and the depth of research on legal aspects of AI show extreme growth. Many of these findings – e.g. related to the ethics, legal status, liability, competition law aspects, general regulation or the role of AI in comparative research<sup>5</sup> – can have direct relevance for copyright law. AI dominates a significant part of the copyright discourse these years as well.

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<sup>1</sup> On legal fictions and copyright law see, Alina Ng Boyte: *The Conceits of our Legal Imagination: Legal Fiction and the Concept of Deemed Authorship* (2014) 17 *Legislation and Public Policy* 707-762.

<sup>2</sup> On metaphors and law see, Stefan Larsson, *Conceptions in the Code - How Metaphors Explain Legal Challenges in Digital Times* (New York: Oxford University Press, 2017).

<sup>3</sup> This chapter uses copyright law as a term to describe authors’ rights, related rights and *sui generis* protection. Wherever necessary, these terms/categories will be clearly separated.

<sup>4</sup> Pamela Samuelson, ‘Allocating Ownership Rights in Computer-Generated Works’ (1986) *University of Pittsburgh Law Review* 1192-1196.

<sup>5</sup> Compare to Péter Mezei, ‘From Leonardo to the Next Rembrandt - The Need for AI-Pessimism in the Age of Algorithms’ (2020) 2 *UFITA – Archiv für Medienrecht und Medienwissenschaft* 392.

What AI really means is a mystery – obscured by thick clouds. As *Shlomit Yanisky-Ravid* noted, “defining AI is not an easy task”.<sup>6</sup> This can easily be noticed in light of the recurring attempts to define AI that share common doctrinal elements (similarities) and show significant differences as well.<sup>7</sup> AI can be either a software or a hardware;<sup>8</sup> and it can be a system, an entity and a science.<sup>9</sup> Depending upon the independence and the “creativity” of the given software or hardware, we can differentiate between strong (full), general or weak (narrow) AI.<sup>10</sup> This latter category is what matters the most from the perspective of copyright law. From mere tools or assistants to human activities, algorithms, robots or machines have become “creators” (or generators in my understanding) of information.<sup>11</sup>

The creation of/with AI has three main stages: (1) coding; (2) input, training or machine learning; and (3) output.<sup>12</sup> Coding is mainly a human privilege (yet), and input/training is also heavily overseen by humans in the majority of cases. Various algorithms (most importantly Artificial Neural Networks or strong AI) are coded in a way that they are capable of learning autonomously, that is, to select the input they are willing to analyse. Indeed, “machine learning algorithms can rewrite themselves”.<sup>13</sup> In sum, a significant amount of output might be generated by the machine with no causal connection between the original human programmer and the final output – usually coined as computer-generated (or emergent, generative or procedurally generated) “works”.<sup>14</sup> As long as a machine or algorithm is only a mere tool or assistant to a human creator, copyright law is more or less ready to classify the final output as a protectable subject matter. Challenges arise as soon as the causal link between the human coder or end-user and the output fades.<sup>15</sup> We will continue to focus on this latter situation.

AI is a part of our daily life. AI is used in sports, health care, weapon industry, robotics, virtual reality, fintech, retail stores, digital marketing, fashion industry, criminal investigations, the fight against pandemic or humanitarian catastrophes, and it is the holy grail of self-driving cars. Big data would also remain an uncontrollable ocean of information without algorithms. AI has an

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<sup>6</sup> Shlomit Yanisky-Ravid, ‘Generating Rembrandt: Artificial Intelligence, Copyright, and Accountability in the 3A Era - The Human-Like Authors Are Already Here - A New Model’ (2017) *Michigan State Law Review* 673.

<sup>7</sup> Mezei (n 5) at 394.

<sup>8</sup> Yanisky-Ravid (n 6) at 673-674.

<sup>9</sup> Mauritz Kop, ‘AI & Intellectual Property: Towards an Articulated Public Domain’ (2020) 28 *Texas Intellectual Property Law Journal* 297-342.

<sup>10</sup> On the technological aspects of the various forms of AI and machine learning see, Guido Noto La Diega, ‘Artificial Intelligence and Databases in the Age of Big Machine’ (2018) 27 *AIDA* 98-101; Tim Rohner, ‘Der Schutz von KI-Schöpfungen im schweizerischen Urheberrecht’ (2019) *Zeitschrift für geistiges Eigentum / Intellectual Property Journal* 46-51; Rosa Maria Ballardini, Kan He, and Teemu Roos, ‘AI-Generated Content: Authorship and Inventorship in the Age of Artificial Intelligence’, in Taina Pihlajarinne, Juha Vesala, and Olli Honkkila (eds), *Online Distribution of Content in the EU*, (Cheltenham: Edward Elgar, 2019) 119-121; Lutz-Christian Wolff, ‘Artificial Intelligence ante portas: The End of Comparative Law?’ (2019) 3 *The Chinese Journal of Comparative Law* 487-489.

<sup>11</sup> Daniel J. Gervais, ‘The Protection Under International Copyright Law of Works Created with or by Computers’ (1991) 5 *IIC - International Review of Intellectual Property and Competition Law* 628-654.

<sup>12</sup> Daniel J. Gervais, ‘The Machine as Author’ (2020) *Iowa Law Review* 2057-2059.

<sup>13</sup> Herbert Zech, ‘Künstliche Intelligenz und Haftungsfragen’ (2019) 2 *Zeitschrift für die gesamte Privatrechtswissenschaft* 198-219.

<sup>14</sup> Florian De Rouck, ‘Moral rights & AI environments: the unique bond between intelligent agents and their creations’ (2019) 4 *Gewerblicher Rechtsschutz und Urheberrecht Internationaler Teil* 434.

<sup>15</sup> Tim W. Dornis, ‘Der Schutz künstlicher Kreativität im Immaterialgüterrecht’ (2019) 12 *Gewerblicher Rechtsschutz und Urheberrecht* 1253-1254.

exponentially growing relevance in the copyright industry as well, including artworks, motion pictures, sound recordings, literature or museums.<sup>16</sup>

While a significant amount of (let's call them AI-positivist) papers accept the idea of the protectability of AI-generated outputs, this chapter expresses an AI-pessimistic approach. *Daniel Gervais* questioned whether IP law is ready for AI.<sup>17</sup> I believe that copyright law is neither ready for a paradigm shift, nor is it necessary and proper to protect AI-generated outputs. This chapter takes the view that the most fundamental elements of copyright law are deeply connected to human authorship, that copyright's old author-centric paradigm is far from outdated, and that this paradigm shall be retained.<sup>18</sup> Hence, as long as there is no convincing policy argument or legal and economic evidence to the contrary, the *status quo* of copyright law shall not be stretched to cover algorithmic creativity.

The structure of this chapter is as follows. Section II raises four open questions, and guesses whether copyright law is the right tool to protect AI-outputs. Section III discusses five distinct, still closely interconnected issues/concepts of copyright law; namely, its history, its justifications, the concept of authorship, originality and moral rights. I believe that these fundamental pillars or core elements of copyright law speak against any protection of AI-outputs, and there is no conclusive evidence that necessitates the overruling of the *status quo*. In the final section, the paper concludes that the time has not come (yet) to fit emergent works into copyright law.

## II. Four Open Questions on AI and Copyright

Before turning to my arguments against the introduction of any norms on AI-copyright, we shall address a few open questions of this field.

First, *do we face any "AI winter" yet?* AI-science has chilled at least twice since research on this field started many decades ago.<sup>19</sup> In light of the continuous development of Artificial Neural Networks, the enormous amounts of funding involved, as well as the fact that AI has become a part of our daily routine, we might tend to believe that no significant AI winter is ahead of us anymore. Critical voices exist, though. Some have noted that the hysteria around AI "could actually end up turning people against AI research, bringing significant progress in the technology to a halt".<sup>20</sup> Or as a columnist wrote: "[t]oday's 'AI summer' is different from previous ones. It is brighter and warmer, because the technology has been so widely deployed. Another full-blown winter is unlikely. But an autumnal breeze is picking up".<sup>21</sup>

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<sup>16</sup> In greater depth see, Mezei (n 5) at 395-398.

<sup>17</sup> Daniel Gervais, 'Is Intellectual Property Law Ready for Artificial Intelligence?' (2020) 2 *GRUR International* 117.

<sup>18</sup> Sam Ricketson, 'The 1992 Horace S. Manges Lecture - People or Machines: The Berne Convention and the Changing Concept of Authorship' (1991) *Columbia-VLA Journal of Law & the Arts* 3.

<sup>19</sup> Milton Lim, 'History of AI Winters', *Actuaries Digital*, September 5, 2018; available at <https://www.actuaries.digital/2018/09/05/history-of-ai-winters/> (last accessed on July 19, 2021).

<sup>20</sup> Wim Naudé, 'AI's Current Hype and Hysteria Could Set the Technology Back by Decades', *The Conversation*, July 24, 2019; available at <http://theconversation.com/ais-current-hype-and-hysteria-could-set-the-technology-back-by-decades-120514> (last accessed on July 19, 2021).

<sup>21</sup> Tim Cross, 'An Understanding of AI's Limitations Is Starting to Sink In', *The Economist*, June 11, 2020; available at <https://www.economist.com/technology-quarterly/2020/06/11/an-understanding-of-ais-limitations-is-starting-to-sink->

Second, *will future AI algorithms need any human intervention at all?* Coding of AI is still dominantly a human domain. Furthermore, not all AI can generate outputs autonomously. The best example here might be The Next Rembrandt project. There, programmers taught the algorithm and selected the features of the new “painting”. The ultimate creation of the output was done by the AI itself, but strictly bound to programmers’ decisions. Challenging copyright’s anthropocentric *status quo* is not an urgent task yet.

Third, *will there be any market/need for AI-generated contents?* At first sight, this question might be outdated, since the sale of the Portrait of Edmond Bellamy<sup>22</sup> or 2021’s NFT craze, including the sale of AI-generated tokenized artworks,<sup>23</sup> evidences that there is at least some market for some emergent works. We shall remain cautious with generalizing the relevance of this auction. The sale of AI artworks by auction houses is still the exception rather than the rule. The mere sale of any output does not necessitate any legislation on this field. In the lack of empirical evidence, we are unable to measure whether AI-generated outputs could replace human creations on the market or not.<sup>24</sup> It is similarly far from certain that these sales could be repeated in other fields of the creative industry, e.g. in literature or music, where harmony and logic are of crucial importance. Finally, “market” is neither only about the quality of the given content, it is also about branding. While AI-generated music is a reality, there is no guarantee that humans would find AI-music more appealing. We lack empirical and economic evidence regarding the marketability of AI-outputs, which is a great concern from a policy perspective.

Fourth, *is there any real need to protect AI-generated outputs by copyright law?* In her study, Nathalie Nevejans took the view that “[t]here is no need to overhaul the whole body of literary and artistic property law, but merely to adjust it in the light of the autonomous robots’ new/future abilities”.<sup>25</sup> I am not confident that this is a correct opinion. Stretching copyright law’s complex net of concepts, doctrines, theories and rules to fit AI into copyright law looks neither an easy task nor a wise decision. What legislative justifications can serve as a basis for the protection of emergent works? What about exclusivity of rights or monopolies? Shall we grant exclusive rights to those algorithms that might flood the market with an unlimited amount of outputs? Shall we grant personality and moral rights to AI? Who shall have the ownership interests over the AI-generated outputs? Shall we analogically apply the work-made-for-hire doctrine in the AI environment? What about originality? Can AI be intellectual, creative and expressive? How to count the term of protection, if algorithms do not age? Shall autonomous machine learning comply with the existing limitations and exceptions? Shall we use the rules on technological protection measures and rights management information to AI outputs? Who shall bear the liability or

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[in](#) (last accessed on July 19, 2021).

<sup>22</sup> Gabe Cohn: AI Art at Christie’s Sells for \$432,500, *The New York Times*, October 25, 2018; available at <https://www.nytimes.com/2018/10/25/arts/design/ai-art-sold-christies.html> (last accessed on July 19, 2021).

<sup>23</sup> Alexandra Giannopoulou, João Pedro Quintais, Peter Mezei and Balázs Bodó: The Rise of Non-Fungible Tokens (NFTs) and the Role of Copyright Law – Part I, Kluwer Copyright Blog, April 14, 2021; available at <http://copyrightblog.kluweriplaw.com/2021/04/14/the-rise-of-non-fungible-tokens-nfts-and-the-role-of-copyright-law-part-i/> (last accessed on July 19, 2021).

<sup>24</sup> Anne Lauber-Rönsberg and Sven Hetmank, ‘The Concept of Authorship and Inventorship Under Pressure: Does Artificial Intelligence Shift Paradigms?’ (2019) 7 *Journal of Intellectual Property Law & Practice* 578.

<sup>25</sup> Nathalie Nevejans, *European Civil Law Rules in Robotics*, European Union, 2016, 6; available at [https://www.europarl.europa.eu/RegData/etudes/STUD/2016/571379/IPOL\\_STU\(2016\)571379\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2016/571379/IPOL_STU(2016)571379_EN.pdf) (last accessed on July 19, 2021).

accountability for infringements of others' copyrights (during the coding, learning and output phases)? Who and how can enforce any possible rights in favour of AI? Who shall enjoy the benefits and receive any rewards for the misuse of any AI-generated output? Will AI have any standing to defend itself or sue others?

In short, copyright law is far more complex than allowing a mere “adjustment” to fit AI into its domain. Indeed, relying on the sports language of American football: the ruling on the field might only be reversed if there is any indisputable (conclusive) evidence for the reversal. The *status quo* of copyright law might only be overruled or stretched if there is significant and balanced evidence that AI deserves an equivalent level of protection with humans. Otherwise we might run into a serious trap.

### III. The ruling on the field...

I often use the metaphor of an ancient Greek temple to describe copyright law. Ancient Greek temples had three main parts: the foundations and *crepidoma*; the columns; and the *entablature*.<sup>26</sup> In a pure metaphoric sense, the foundations and *crepidoma* of the temple of copyright is its history and the incentives that the system is based on. The columns of the temple are the doctrinal elements of copyright law. The *entablature* of the temple of copyright are the tools, methods and practices how copyrights are exercised and enforced. Five elements of this metaphoric temple require careful analysis in order to decide, whether AI-generated outputs can fit into the concept of copyright law. As long as AI-outputs do not fit into or fulfil the requirements of these “core elements”, we cannot talk about AI-copyright at all.

#### 1. Copyright's history

The emergence of copyright protection is due to the appearance and conjunction of four different factors. First, the (European) invention of the printing press replaced manual multiplication with massive reproduction of written works (mainly books), and made the copies marketable. We might call this factor the “*material side*” of copyright's history. Second, individualism and the Renaissance increased the interest of self-expression as well as the protection of the personal/intellectual interests of authors. We might call this factor the “*personal side*” of copyright's history. Third, with the advent of public education as well as the Renaissance's artistic explosion, citizens' demand to become owners of physical copies of works culminated in a new copyright ecosystem. We might call this factor the “*market/consumption side*” of copyright's history. Fourth, from the 15<sup>th</sup> to the 18<sup>th</sup> century, kings or other leaders of European countries/cities granted “patents” to specific printers to exclusively print specific or all books at a designated geographical territory.<sup>27</sup> It took centuries to learn that these monopolies do not serve the society in general. It was only in 1709 that the English political environment became ready to settle and

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<sup>26</sup> Cautious readers might notice that the structure of an Ancient Greek temple is much more sophisticated, partially depending upon the relevant order (Ionic, Doric or Corinthian), than the short generalization I used above. On Ancient Greek architecture see in details: Barbara A. Barletta, *The Origins of the Greek Architectural Orders* (New York: Cambridge University Press, 2001).

<sup>27</sup> Jane Ginsburg, ‘Proto-Property in Literary and Artistic Works: Sixteenth-Century Papal Printing Privileges’ in Isabella Alexander and H. Tomás Gómez-Arestegui (eds), *Research Handbook on the History of Copyright Law* (Cheltenham: Edward Elgar, 2016) 237-267.

regulate the copyright ecosystem.<sup>28</sup> We might call this factor the “*legislative side*” of copyright’s history.<sup>29</sup>

In England, the Stationers Company controlled book publishing for a long time.<sup>30</sup> The Company’s monopoly was based on its role as a censor on behalf of the Crown.<sup>31</sup> The Company and its censorship turned to be a limitation to a prospering publishing market and national literature in the 17<sup>th</sup> century. Authors like John Milton or Daniel Defoe argued in favour of the abolition of this regime. The Statute of Anne finally eliminated the Company’s monopolies, declared that the rights of reproduction and distribution should be vested in the authors for a limited (but renewable) period of time, and introduced the doctrine of public domain.<sup>32</sup> In the United States, the IP Clause of the Constitution called for the promotion of the progress of science and useful arts.<sup>33</sup> The copyright law (first enacted in 1793) thus aimed to reach a balance between the interests of the creators and the society as a whole. The basic objective of the first French Copyright Statute (the “Chénier Act” of 1793) was to introduce liability for the content of the citizens’ speech.<sup>34</sup> Irrespective of the different economical, technological, intellectual, social and political challenges that these countries faced in the 18<sup>th</sup>-19<sup>th</sup> century, these first copyright acts were common in the protection of both individual human authors and the general public.

Academia, e.g. Yoshiyuki Tamura’s paper,<sup>35</sup> has convincingly evidenced that most of the challenges and changes to the copyright system were induced by the newly invented technologies in the last three centuries. At the same time, the technological development has always correlated with the consumers’ needs.

In sum, copyright’s history evidences that the ultimate goal of copyright law has always been to serve individual authors’ human-centric and the human society’s general commercial and cultural purposes – in short: *the cultural and economic development of humankind*. No doubt, AI can serve the human society’s goals in a broad sense as well. Just recall the AI-led research in the fight over global epidemics. Nevertheless, AI’s general advantages do not mean that algorithms shall be treated on an equal level with humans’ individual or collective interests. *Copyright history is unquestionably a human history.*

## 2. Copyright Incentives

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<sup>28</sup> Mark Rose, ‘The Public Sphere and the Emergence of Copyright: Areopagitica, the Stationers Company, and the Statute of Anne’ in Ronan Deazley, Martin Kretschmer and Lionel Bently (eds), *Privilege and Property - Essays on the History of Copyright* (Cambridge: Open Book Publishers, 2010) 67-88.

<sup>29</sup> Péter Mezei, ‘The Role of Technology and Consumers’ Needs in the Evolution of Copyright Law - From Gutenberg to the Filesharers’ in Éva Jakab (ed), *Geistiges Eigentum und Urheberrecht aus der historischen Perspektive* (Szeged: Lectiones Iuridicae 10, Pólay Elemér Alapítvány, 2014) 73-75.

<sup>30</sup> Ian Gadd, ‘The Stationers’ Company in England Before 1710’ in Isabella Alexander and H. Tomás Gómez-Arestegui (eds), *Research Handbook on the History of Copyright Law* (Cheltenham: Edward Elgar, 2016) 81-95.

<sup>31</sup> Brander Matthews, ‘The Evolution of Copyright’ (1890) *Political Science Quarterly* 589-590.

<sup>32</sup> L. Ray Patterson, Stanley F. Birch and Craig Joyce, ‘A Unified Theory of Copyright - Chapter 2: The Copyright Clause and Copyright History’ (2009) *Houston Law Review* 244-256.

<sup>33</sup> See US Constitution Article 1., Section 8., Paragraph 8.

<sup>34</sup> Anne Latournerie, ‘Petite histoire des batailles du droit d’auteur’ (2001) 5 *Multitudes* 43-46.

<sup>35</sup> Yoshiyuki Tamura, ‘Rethinking Copyright Institution for the Digital Age’ (2009) *WIPO Journal* 66-68.

A myriad of researchers discuss the justifications of copyright protection. Only to name a few, William Fisher spoke about welfare, fairness, culture and social planning theories.<sup>36</sup> Shlomit Yanisky-Ravid mentioned law and economics, personality, labour theories.<sup>37</sup> Takashi Yamamoto differentiated between labour, personality, incentive and vehicle theories.<sup>38</sup> Carys Craig and Ian Kerr recognized deontological (personality and labour) and teleological (utilitarian) theories.<sup>39</sup>

This chapter shall not judge which opinion is the most convincing. I use the most well-known expressions, and differentiate between three main forms of justifications of copyright law: the personality, the labour and the utilitarian theories. It is worth noting that all countries rely on a mixture of various theories.<sup>40</sup> What matters more, for the purposes of this chapter, is that both the personality and the labour theory are strictly connected to an individual creator's personal achievements. The labour theory focuses more on the invested energy and hard work of that person, and the personality theory focuses more on the intellectual/metaphysical bond between the author and "her child". Both justifications admit that protection is granted to the human author for the creation of the intellectual output. The labour and the utilitarian concepts share another common point: copyright protection is granted to reward the intellectual (occasionally physical) investment in the creation and to incentivise any future creations. Under these concepts, the author (be it a human or a "deemed author", e.g. a corporation) shall enjoy the fruits of her work.

Irrespective of the justification(s) that a given country applies in its copyright regime, all theories are inherently bound to the concept of authorship. In an AI-environment, the personality right justification shall be declined *per se*, as long as algorithms do not have any e-personality. The labour and the utilitarian concepts might look applicable to a certain level to emergent works, as these theories focus on the reward and the incentives of *creation* rather than on the *creator* itself. Algorithms rarely have any interests in rewards and incentives. Daniel Gervais noted that "if an AI machine is programmed to 'create', it requires no *ex ante* legal incentive or *ex post* reward for doing so".<sup>41</sup>

No doubt, several policy considerations might argue for the introduction of AI-copyright. Kalin Hristov noted that the copyright *status quo* might chill innovation in general or the developers to create, use and improve the AI machines' capabilities, as well as limit the number of available works for teaching, research or other purposes.<sup>42</sup> At the moment, in the lack of proper evidence on the detrimental effects of lack of AI-protection, *there are more convincing arguments against than in favour of the protection of emergent works under the leading copyright justifications.*

### 3. Authorship

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<sup>36</sup> William Fisher, 'Theories of Intellectual Property' in Stephen Munzer (ed), *New Essays in the Legal and Political Theory of Property* (Cambridge University Press, 2001) 168-199.

<sup>37</sup> Yanisky-Ravid (n 6) at 699-707.

<sup>38</sup> Takashi Yamamoto, 'AI Created Works and Copyright' (2018) *Patents & Licensing* 4-8.

<sup>39</sup> Carys Craig and Ian Kerr, 'The Death of the AI Author' (2019) *Osgoode Legal Studies Research Paper* 32-33.

<sup>40</sup> Jane C. Ginsburg, 'A Tale of Two Copyrights: Literary Property in Revolutionary France and America' (1990) 5 *Tulane Law Review* 991-1031; Ricketson (n 18) at 4-8.

<sup>41</sup> Gervais (n 17) at 2095. See further Samuelson (n 4) at 1199.

<sup>42</sup> Kalin Hristov, 'Artificial Intelligence and the Copyright Dilemma' (2017) 3 *IDEA* 431, 438-439; Tim W. Dornis, 'Artificial Creativity: Emergent Works and the Void in Current Copyright Doctrine' (2020) 22 *Yale Journal of Law & Technology* 30-59.

Copyright statutes, as well as international copyright treaties fail to define one of the most important elements of the regime, namely the concept of “author”. Commentators of the Berne Convention confirm that the lack of definition is generally due to the common understanding among the Member States that authors are those humans, who create the original works of expression.<sup>43</sup> Even in the silence on authorship, the Berne Convention necessitates to the same conclusion by requiring that authors are nationals of the Member States of the Union, as nationality can only be granted to human individuals.<sup>44</sup> The same result can be reached through a fundamental/human rights approach. Both the Universal Declaration of Human Rights and the International Covenant on Economic, Social and Cultural Right<sup>45</sup> grant human rights to “everyone”, that is, to “humans”.<sup>46</sup> This logic is further supported by case law. The CJEU concluded in various cases that originality (and therefore copyright protection) requires that authors shall put their *personal* touch on their *intellectual* creations.<sup>47</sup> Since the seminal *Trade-mark Cases*,<sup>48</sup> US courts often use the expression “creation of the *mind*” in this context – and there they refer to human minds.<sup>49</sup> Domestic copyright regimes are generally based on the “originalist premise” of authorship.

Copyright acts, however, protect other than humans as well. The EU’s Software Directive expressly allowed for the Member States to grant authorship to legal persons.<sup>50</sup> Another example for “deemed authorship” comes from the work-made-for-hire doctrine. According to it, an employer (or commissioner), including legal persons, might automatically be treated as the author of the work that originates from the employee (commissioned person), or it might contractually acquire the copyrights related to the given work. The classic European related rights break the anthropocentric system of copyright law by granting separate rights to producers of films, sound recordings and other corporations, e.g. broadcasting organizations; and by allowing for transfer of copyrights of authors and performers to the related rights holders at the same time. Strong policy

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<sup>43</sup> Sam Ricketson and Jane C. Ginsburg, *International Copyright and Neighbouring Rights: The Berne Convention and Beyond* (2<sup>nd</sup> edn) (Volume 1, Oxford University Press, 2005) 358.

<sup>44</sup> Berne Convention, Art. 3. Article 4(a) opens the door for a broader authorship concept with respect to cinematographic works.

<sup>45</sup> Article 27 and Article 15, respectively.

<sup>46</sup> Enrico Bonadio and Luke McDonagh, ‘Artificial Intelligence as Producer and Consumer of Copyright Works: Evaluating the Consequences of Algorithmic Creativity’ (2020) 2 *Intellectual Property Quarterly* 116.

<sup>47</sup> Compare to Case C-5/08 - Infopaq International A/S v. Danske Dagblades Forening, Judgment of the Court (Fourth Chamber), 16 July 2009 (ECLI:EU:C:2009:465); Case C-145/10 - Eva-Maria Painer v. Standard Verlags GmbH and Others, Judgment of the Court (Third Chamber), 1 December 2011 (ECLI:EU:C:2011:798); Joined Cases C-403/08 and C-429/08 - Football Association Premier League Ltd and Others v. QC Leisure and Others, and Karen Murphy v Media Protection Services Ltd., Judgment of the Court (Grand Chamber), 4 October 2011 (ECLI:EU:C:2011:631); Case C-604/10 - Football Dataco Ltd and Others v. Yahoo! UK Ltd and Others, Judgment of the Court (Third Chamber), 1 March 2012 (ECLI:EU:C:2012:115); Case C-310/17 - Levola Hengelo BV v. Smilde Foods BV, Judgment of the Court (Grand Chamber), 13 November 2018 (ECLI:EU:C:2018:899); Case C-683/17 - Cofemel – Sociedade de Vestuário SA v. G-Star Raw CV, Judgment of the Court (Third Chamber), 12 September 2019 (ECLI:EU:C:2019:721); Case C-833/18 - SI, Brompton Bicycle Ltd. v. Chedech / Get2Get, Judgment of the Court (Fifth Chamber), 11 June 2020 (ECLI:EU:C:2020:461).

<sup>48</sup> Trade-Mark Cases, 100 *U.S.* 82(1879), p. 94.

<sup>49</sup> Samuelson (n 4) at 1197-1199.; Annemarie Bridy, ‘Coding Creativity: Copyright and the Artificially Intelligent Author’ (2012) *Stanford Technology Law Review* 1, 3-9; Gervais (n 17) at 2073-2085.

<sup>50</sup> Directive 2009/24/EC of the European Parliament and of the Council of 23 April 2009 on the legal protection of computer programs (Codified version), Article 2(1).

arguments favoured such “breaks” of the author-centric copyright. Those policy arguments include(d) the fights against piracy, supporting investment and innovation. To the contrary, such a “break” is correctly refuted, where no strong policy arguments support the protection of non-human originators. Such an example is the lack of protection for the benefit of animals, e.g. a black macaque.<sup>51</sup> Animals might execute cognitive tasks that serve “communication purposes”; they however, never do such acts for “dissemination purposes”. Animals do not aim to be treated as authors, do not fight for individual rights nor do they create for rewards and incentives. If we use the *Naruto* case as an analogy, it might be a better analogy *against* AI-copyright rather than in favour of it.

Shall AI be treated as a subject of authorship? Should we grant such status to algorithms even in the clear lack of any personality on their side? And even if we grant e-personality to machines, shall that concept be an equivalent of the personality rights granted to humans?

I take the view that only humans can be authors in a copyright sense.<sup>52</sup> As Christopher Buccafusco perfectly summarized: “[c]onstitutionally, copyright law requires authors; it cannot simply kill them off”.<sup>53</sup> For the purposes of copyright protection there must be a human behind the machine, and authorship cannot be fully “de-romanticized”;<sup>54</sup> or, as Josefien Vanherpe put it: “[c]reativity is hereby viewed as a quintessentially human faculty”.<sup>55</sup> *The generation of any output is outside of the scope of copyright law, if there is no causal link between the output and any human behind the production of that output.* “Algorithmic authorship” represent an irresolvable paradox.

#### 4. Originality

Originality is neither defined by international copyright norms. Nothing else than an open list of possible subject matters and a mere reference to “original works” in the Berne Convention,<sup>56</sup> and the idea v. expression dichotomy by various treaties<sup>57</sup> help countries to set the threshold of protection in their domestic copyright regimes.

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<sup>51</sup> *Naruto, et al. v. David John Slater, et al.*, 888 *F.3d* 418 (2018). See further U.S. Copyright Office (2017) §306 and §313.2. Compare to Andres Guadamuz, ‘The Monkey Selfie: Copyright Lessons for Originality in Photographs and Internet Jurisdiction’ (2016) *Internet Policy Review* 1-12; Paul Lambert, ‘Computer-generated Works and Copyright: Selfies, Traps, Robots, AI and Machine Learning’ (2017) *European Intellectual Property Review* 14-15.; Deming Liu, ‘Forget the Monkey Copyright Nonsense for Goodness Sake, Dude!’ (2018) *European Intellectual Property Review* 61-65; Jani Ihalainen, ‘Computer Creativity: Artificial Intelligence and Copyright’ (2018) 9 *Journal of Intellectual Property Law & Practice* 726.

<sup>52</sup> Jean-Marc Deltorn and Franck Macrez, ‘Authorship in the Age of Machine Learning and Artificial Intelligence’ (2018) *Centre for International Intellectual Property Studies (CEIPI) Research Paper No. 2018-10* 8-9. To the opposite see Emmanuel Salami, ‘AI-generated Works and Copyright Law: Towards a Union of Strange Bedfellows’ (2021) 2 *Journal of Intellectual Property Law & Practice* 129-130.

<sup>53</sup> Christopher Buccafusco, ‘A Theory of Copyright Authorship’ (2016) *Virginia Law Review* 1260.

<sup>54</sup> Craig and Kerr (n 39) at 30-37.

<sup>55</sup> Josefien Vanherpe: AI and IP - a Tale of Two Acronyms. In: Jan De Bruyne - Cedric Vanleenhove (Eds.): *Robots, AI and the Law in Belgium* (Antwerp/Cambridge: Intersentia, 2020) 221.

<sup>56</sup> Berne Convention, Article 2(1) and (3).

<sup>57</sup> WIPO’s Copyright Treaty, Article 2; TRIPS Agreement, Article 9(2).

For long, the domestic variations of originality showed significant differences,<sup>58</sup> ranging from the “*sweat of the brow*” doctrine in the USA<sup>59</sup> through the British “*skill, labour and judgment*”<sup>60</sup> or the Canadian “*exercise of skill and judgment*”<sup>61</sup> to the Continental European quest for “*personal imprints*” of the authors<sup>62</sup> and the (strictest) German “*Schöpfungshöhe*” (level of creativity).<sup>63</sup> We have witnessed a global merger of the concept of originality in the last three decades.<sup>64</sup> This “global entropy” is partially due to various concurring events/rulings in different countries/regions of the world. E.g. the United Kingdom accessed the European Economic Community in 1973, and the later EU directives have led to doctrinal changes to the topic of originality in the UK.<sup>65</sup> The United States joined the Berne Convention in 1988; and the Supreme Court of the United States quashed the “*sweat of the brow*” doctrine in *Feist v. Rural* in 1991.<sup>66</sup> This way, the USA got closer to its European counterparts regarding the meaning of originality. The CJEU introduced a “common denominator” concept of the threshold of originality. This autonomous concept of EU law turned to be stricter than the British concept of “*skill, labour and judgment*”, but was clearly a lower standard than the German “*Schöpfungshöhe*”.<sup>67</sup>

Originality is closely connected to authorship, subject matter and – in countries where it is relevant – creativity. David Cropley’s book on human creativity started with a simple statement: “[n]obody really knows what creativity is!”<sup>68</sup> Unsurprisingly, AI-positivist researchers pay close attention to the concept of creativity to convince their readers that AI-generated outputs fulfil the requirements of originality. As Florian De Rouck put it, “[w]hether a computer can be creative is ultimately a philosophical question”.<sup>69</sup> Similarly, Tim W. Dornis argued that creativity might be viewed from the perspective of the process or the result; where “process creativity” focuses on the originator’s

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<sup>58</sup> Gervais (n 11) at 634-640.; Paul Goldstein and Bernt Hugenholtz, *International Copyright - Principles, Law, and Practice* (2<sup>nd</sup> edn) (Oxford University Press, 2010) 189-194.

<sup>59</sup> On the *pre-Feist* case law on originality see Bridy (2012) 15.

<sup>60</sup> *Ladbroke v. William Hill* [1964] *All E.R.* 465 at 469. Compare to Lionel Bently and Brad Sherman, *Intellectual Property Law* (3<sup>rd</sup> edn) (Oxford University Press, 2009) 94-107.

<sup>61</sup> *CCH Canadian Ltd. v. Law Society of Upper Canada*, Supreme Court of Canada, 2004 *SCC* 13.

<sup>62</sup> Goldstein / Hugenholtz (n 58) at 190.

<sup>63</sup> Gerhard Schricker, ‘Farewell to the “Level of Creativity” (Schöpfungshöhe) in German Copyright Law?’ (1995) *IIC - International Review of Intellectual Property and Competition Law* 41.

<sup>64</sup> Daniel J. Gervais, ‘Feist Goes Global: A Comparative Analysis of the Notion of Originality in Copyright Law’ (2002) *Journal of the Copyright Society U.S.A.* 949.

<sup>65</sup> Andreas Rahmatian, ‘Originality in UK Copyright Law: The Old “Skill and Labour” Doctrine Under Pressure’ (2019) 8 *IIC - International Review of Intellectual Property and Competition Law* 4-34.

<sup>66</sup> *Feist Publications, Inc. v. Rural Telephone Service Co.*, 499 *U.S.* 340 (1991), p. 345. On the *post-Feist* meaning of originality in the USA see, Jane C. Ginsburg, ‘No “Sweat”? Copyright and Other Protection of Works of Information after *Feist v. Rural Telephone*’ (1992) *Columbia Law Review* 338-388.

<sup>67</sup> Besides the case law of the CJEU listed in note 47 *supra*, on the concept of originality under EU law see e.g. Tatiana-Eleni Synodinou, ‘The Foundations of the Concept of Work in European Copyright Law’ in Tatiana-Eleni Synodinou (ed), *Codification of European Copyright, Challenges and Perspectives* (Alphen aan den Rijn: Kluwer Law International, 2012) 93-113.; Eleonora Rosati, *Originality in EU Copyright - Full Harmonization through Case Law* (Cheltenham: Edward Elgar, 2013); Annette Kur, ‘Unité de l’art is Here to Stay - Cofemel and its Consequences’ (2020) 4 *Journal of Intellectual Property Law & Practice* 290-300; Uma Suthersanen and Marc D. Mimler, ‘An Autonomous EU Functionality Doctrine for Shape Exclusions’ (2020) 6 *GRUR International* 573-575.

<sup>68</sup> David H. Cropley, *Homo Problematis Solvendis - Problem-solving Man, A History of Human Creativity* (Springer Nature Singapore, 2019) 1.

<sup>69</sup> De Rouck (n 14) at 434.

creative choices, and “result creativity” focuses on the output’s features.<sup>70</sup> This second category might be the means to protect emergent works.

This logic is flawed for at least a few reasons. First, as indicated above, creativity is not a prerequisite of protection in many countries, including the European Union. To the contrary, originality is generally fixed to authorship and subject matter, both of which are closely connected to humans and human achievements. Second, originality’s “original premise” is much more personal and cultural than any utilitarian understanding, e.g. Dornis’ “process creativity”, would suggest. Indeed, as Neil Weinstock Netanel convincingly noted, copyright’s “production function” is to provide “an incentive for creative expression on a wide array of political, social, and aesthetic issues, thus bolstering the discursive foundations for democratic culture and civic association”.<sup>71</sup>

The romantic concept of authorship might be dead, but human originality is still alive. As Sam Ricketson put it: “[t]here [should] be some intellectual contribution above and beyond that of simple effort (‘sweat of the brow’)” for the purposes of copyright protection.<sup>72</sup> Copyright law is not an investment protection scheme.<sup>73</sup> The fact that some countries have entered into a sharp “AI race” recently, does not legitimize the need for (urgent) protection of emergent works.<sup>74</sup> *Originality cannot be dehumanized*, and cannot be lowered to cover non-human, algorithmic (mass) production of outputs as well – at least not without any good reason.

## 5. Moral rights

The main purpose of moral rights is to build a strong personal relationship between the author and their work.<sup>75</sup> In a truly metaphoric sense, moral rights intend to protect the author’s “trademarks”.

Anne Lauber-Rönsberg and Sven Hetmank noted that “[t]oday, the emotional bond between author and work has been loosened”.<sup>76</sup> No doubt, moral rights are dead in some sense in the 21<sup>st</sup> century. Still, they work as “an indicator of [the work’s] subject, reliability, and quality”.<sup>77</sup> Similarly, Michel Foucault believed that “the author’s name is not simply an element in a discourse (...); it performs a certain role with regard to narrative discourse, assuring a classification function”.<sup>78</sup>

By their nature, moral rights are bound to the human originators of the protectable expressions, and as such, they are inherent obstacles to any argument in favour of AI-copyright. We shall put aside this fact for a second, and try to answer the following question: can AI *exercise* the rights treated to be moral or personal? Can an algorithm have a name that is connected to its output? Can an AI decide the time of first publication? Can it decide on the withdrawal of the content; and can it “believe” that no detrimental changes or modifications shall be made to its expression? As humbly

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<sup>70</sup> Dornis (n 15) at 1254-1255.

<sup>71</sup> Neil Weinstock Netanel, ‘Copyright and a Democratic Civil Society’ (1996) *Yale Law Journal* 347-351.

<sup>72</sup> Ricketson (n 18) at 10.

<sup>73</sup> Gervais (n 17) at 2090.

<sup>74</sup> To the contrary, see, Dilan Thampapillai, ‘If Value Then Right: Copyright and Artificial Intelligence’ (2019) 2 *Australian Intellectual Property Journal* 96-113.

<sup>75</sup> Mira T. Sundara Rajan, *Moral Rights - Principles, Practice and New Technology* (Oxford University Press, 2011) 9.

<sup>76</sup> Lauber-Rönsberg / Hetmank (n 24) at 573.

<sup>77</sup> De Rouck (n 14) at 435.

<sup>78</sup> Michel Foucault, ‘What Is an Author?’ in Paul Rabinow (ed), *The Foucault Reader* (Pantheon Books, 1984) 107.

indicated above, moral rights represent the “trademarks” of the creators of contents, and in an overly trade oriented IP world, algorithms might be able to exercise such rights with great effectiveness.

It is, however, a totally different question, whether algorithms can have any *interests* in those moral rights? It is truly doubtful that machines need any enforceable rights to protect these moral or personal interests. And this is undeniable because *AI simply does not fit into the existing concept of moral rights, as algorithms have no “personality”*.

#### IV. Conclusion

Michel Foucault, in his discussion on what the concept of authorship might mean, quoted (and criticized) Samuel Beckett’s famous question: “what does it matter who is speaking”?<sup>79</sup> Foucault himself argued that “it does not seem necessary that the author function remain constant in form, complexity, and even in existence. I think that, as our society changes, at the very moment when it is in the process of changing, the author function will disappear”.<sup>80</sup> AI-positivists usually echo this opinion and believe that “[i]f the copyright regime did not apply, such works could arguably cause market failures in the absence of other (legal) mechanisms which ensure substantively similar protection with appropriate public interest safeguards”.<sup>81</sup> Or, as Toby Bond and Sarah Blair questioned it, “[s]hould copyright only reward acts of truly human cognition or does it play a more utilitarian role in society, encouraging the production and distribution of new works irrespective of the manner in which they were created?”<sup>82</sup>

With due respect, this chapter respectfully disagrees with these opinions. I have highlighted those fundamental reasons why the current copyright regime (without being unnecessarily hacked) cannot cover emergent works. Some visionary opinions might be quoted to support this position. Sam Ricketson noted three decades ago that “[p]eople, rather than machines, have always been the object of the [Berne] Convention, and, from the point of view of principle, doctrine and practicality, this object should continue to be upheld”.<sup>83</sup> Lev Grossman put it in his seminal article on singularity, “[c]reating a work of art is one of those activities we reserve for humans and humans only. It’s an act of self-expression; you’re not supposed to be able to do it if you don’t have a self”.<sup>84</sup> Indeed, “allocating the copyright to the artificial intelligence would result in overwhelming and unnecessary legal uncertainty, and it would be contrary to the goal of the Patent and Copyright Clause”.<sup>85</sup> This might be true in Europe as well, even though we have no equivalent to the IP Clause of the United States Constitution. Finally, and maybe most importantly, Daniel Gervais convincingly summarized the ultimate goal of copyright law: “both art

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<sup>79</sup> *ibid*, at 101.

<sup>80</sup> *ibid*, at 119.

<sup>81</sup> De Rouck (n 14) at 435.

<sup>82</sup> Toby Bond and Sarah Blair, ‘Artificial Intelligence & copyright: Section 9(3) or authorship without an author’ (2019) 6 *Journal of Intellectual Property Law & Practice* 423.

<sup>83</sup> Ricketson (n 18) at 37. See further Jane C. Ginsburg, ‘People Not Machines: Authorship and What It Means in the Berne Convention’ (2018) 2 *IIC - International Review of Intellectual Property and Competition Law* 131-135.

<sup>84</sup> Lev Grossman, ‘2045: The Year Man Becomes Immortal’, *Time Magazine*, February 10, 2011; available at <http://content.time.com/time/magazine/article/0,9171,2048299,00.html> (last accessed on July 19, 2021).

<sup>85</sup> Victor M. Palace, ‘What if Artificial Intelligence Wrote This? Artificial Intelligence and Copyright Law’ (2019) *Florida Law Review* 234.

in myriad forms and quality journalism have had and should continue to have a role in helping humans understand and better their world. (...) [H]uman progress should serve as a normative guidepost”.<sup>86</sup>

In sum, this paper takes the view that copyright law is a fiction, a legal manifestation of a complex (socio-cultural and economic), fluid and constantly changing set of interests. Unless comprehensive and convincing social, cultural and economic (empirical) evidences exist (or come into existence) to the opposite, the lack of justifications, sound policy arguments and doctrinal clarity shall bar the introduction of any copyright protection for emergent works.<sup>87</sup> A rare example for empirical evidences is a paper by Kalin Hristov. His questionnaire – analysing the response of fifty-seven AI scientists, tech policy experts and copyright scholars – concluded that

“half of participants believe that the US copyright system is not adequately prepared for a future influx of AI-produced works. Respondents, however, fail to reach a resounding consensus on what changes should be implemented by the US Copyright Office. The divided nature of expert opinion and the limited data available to researchers studying intellectual property protection of AI works indicates the need for future research on the topic.”<sup>88</sup>

As long as we are uncertain that the society in general, and human progress (especially culture) in specific would benefit from an AI-copyright regime, rather than only a few stakeholders involved in AI-research, we favour not to regulate at all. We shall agree with Axel Walz, who noted that “[r]egulation, though, is not the only possible, and in many cases may not even be the best approach to retain control over AI”.<sup>89</sup> Likewise, Daniel Schönberger took the view that the “claims for legislative actions are not convincing”.<sup>90</sup> I believe that the wisest decision would be to follow a wait-and-see approach, and check whether licensing of AI-generated outputs (not as a work, but as information or data) necessitates any intervention – either pro or contra the interests of “creators” or AI-investors.

Admittedly, this summary opinion fails to answer an important question. Namely, will the copyright protection of AI-generated outputs ever become a reality? We shall admit that it would be unwise to regret or refuse this possibility – especially as copyright law is a fiction. Finding an appropriate incentive or policy for, as well as the appropriate form of the protection and the detailed and balanced set of rules (ranging from “non-human created IP”<sup>91</sup> through computer generated works,<sup>92</sup> disseminator’s right<sup>93</sup> to the extension of the existing neighbouring rights<sup>94</sup> or

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<sup>86</sup> Gervais (n 17) at 2061.

<sup>87</sup> Jane C. Ginsburg and Luke Ali Budiardjo, ‘Authors and Machines’ (2019) *Berkeley Technology Law Journal* 455-456.; Vanherpe (n 55) 223-225.

<sup>88</sup> Kalin Hristov, ‘Artificial Intelligence and the Copyright Survey’ (2020) *Journal of Science Policy & Governance* 13.

<sup>89</sup> Axel Walz, ‘A Holistic Approach to Developing an Innovation-Friendly and Human-Centric AI Society’ (2017) 2 *IIC-International Review of Intellectual Property and Competition Law* 759.

<sup>90</sup> Daniel Schönberger, ‘Deep Copyright: Up- and Downstream Questions Related to Artificial Intelligence (AI) and Machine Learning (ML)’ in Jacques De Werra (ed), *Droit d’auteur 4.0 / Copyright 4.0* (Geneva/Zurich: Schulthess Editions Romandes, 2018) 158-160.

<sup>91</sup> Natsuko Segawa, ‘Japan eyes rights protection for AI artwork’, *Nikkei Asian Review*, April 15, 2016; available at <https://asia.nikkei.com/Politics-Economy/Economy/Japan-eyes-rights-protection-for-AI-artwork> (last accessed on July 19, 2021).

<sup>92</sup> Compare to Copyright, Designs and Patents Act 1988, §9(3) and §178. See further Payen Components South Africa v. Bovic Gaskets (1996) 33 *IPR* 411, where the Supreme Court of South Africa differentiated between “computer-generated” and “computer-assisted” works. On an *a contrario* endorsement of this solution see, Jani

*sui generis* protection<sup>95</sup> or to the introduction of a brand new *sui generis* regime<sup>96</sup> to emergent works) does not seem to be impossible at all. At the moment, however, the protectability of emergent works is a less acute copyright question than whether the use of algorithms in data analysis runs against existing copyrights (including database makers' *sui generis* protection), or whether AI creators, investors or users can rely on any limitation or exception.<sup>97</sup> Indeed, it looks like a balanced compromise to apply limitations or exceptions for the benefit of AI in order to support effective machine learning activities, rather than envisaging any copyright protection for the AI-generated outputs. Similarly, it is still an open question whether automated (algorithmic) enforcement of copyright is desirable or acceptable,<sup>98</sup> or, ultimately, whether it leads to modern (digital) copyright censorship.<sup>99</sup>

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McCutcheon, 'The Vanishing Author in Computer-Generated Works: A Critical Analysis of Recent Australian Case Law' (2013) 36 *Melbourne University Law Review* 915-969; Jani McCutcheon, 'Curing the Authorless Void: Protecting Computer-Generated Works Following ICETV and Phone Directories' (2013) 37 *Melbourne University Law Review* 46-102; Niloufer Selvadurai and Rita Matulionyte, 'Reconsidering Creativity: Copyright Protection for Works Generated Using Artificial Intelligence' (2020) 7 *Journal of Intellectual Property Law & Practice* 538.

<sup>93</sup> Ana Ramalho, 'Will Robots Rule the (Artistic) World?: A Proposed Model for the Legal Status of Creations by Artificial Intelligence Systems' (2017) *Journal of Internet Law* 22.

<sup>94</sup> Dornis (n 15) at 1260-1264.

<sup>95</sup> Noto La Diega (n 10) at 114.

<sup>96</sup> Bonadio and McDonagh (n 46) at 133-136.

<sup>97</sup> Benjamin L. W. Sobel, 'Artificial Intelligence's Fair Use Crisis' (2017) *Columbia-VLA Journal of Law & the Arts* 45-97; Schönberger (n 90) at 160-172; Nicolas Binctin, 'TDM: A Challenge for Artificial Intelligence' (2019) *RIDA* 5-32; Eleonora Rosati, 'Copyright as an Obstacle or an Enabler? A European Perspective on Text and Data Mining and its Role in the Development of AI Creativity' (2019) 2 *Asia Pacific Law Review* 198-217; Theodoros Chiou, 'Copyright Lessons on Machine Learning: What Impact on Algorithmic Art?' (2019) 3 *JIPITEC* 401-411; Mauritz Kop, 'Machine Learning & EU Data Sharing Practices' (2020) *TTLF Newsletter on Transatlantic Antitrust and IPR Developments - Stanford-Vienna Transatlantic Technology Law Forum* 7, 9-11; Mark A. Lemley and Bryan Casey, 'Fair Learning' (2020) 4 *Texas Law Review* 743; Bonadio and McDonagh (n 46) at 126-131; Romain Meys, 'Data Mining Under the Directive on Copyright and Related Rights in the Digital Single Market: Are European Database Protection Rules Still Threatening the Development of Artificial Intelligence?' (2020) 5 *GRUR International* 457-473; Selvadurai and Matulionyte (n 92) at 539-542; Sean Flynn, Christophe Geiger, João Pedro Quintais, Thomas Margoni, Matthew Sag, Lucie Guibault and Michael Carroll, 'Implementing User Rights for Research in the Field of Artificial Intelligence: A Call for International Action' (2020) 7 *European Intellectual Property Review* 393-398.

<sup>98</sup> Compare to Niva Elkin-Koren, 'Fair Use by Design' (2017) *UCLA Law Review* 1082-1100; Henning Grosse Ruse-Khan, 'Automated Copyright Enforcement Online: From Blocking to Monetization of User-Generated Content' (2020) *University of Cambridge Faculty of Law Legal Studies Research Paper Series, Paper no. 8/2020* 1, 16.

<sup>99</sup> Martin Senftleben, 'The Original Sin - Content 'Moderation' (Censorship) in the EU' (2020) 4 *GRUR International* 339-340.