IIC (2024) 55:1129–1165
https://doi.org/10.1007/s40319-024-01481-5

ARTICLE

Elaborating a Human Rights-Friendly Copyright Framework for Generative AI

Christophe Geiger

Accepted: 25 April 2024 / Published online: 3 June 2024

Abstract As works are increasingly produced by machines using artificial intelligence (AI) systems, with a result that is often difficult to distinguish from that of a human creator, the question of what should be the appropriate response of the legal system and, in particular, of the copyright system has become central. If the generator of copyright protection has traditionally been the author's creative input, AI forces us to reassess what in the creative process is special in human creativity and where the creative input lies in AI-generated works. But it also poses more fundamental questions on what the copyright system should achieve and who/what it should protect. In particular, since many human authors will potentially face the competition of these AI machines on the market, new ways of remunerating creators will have to be imagined while making sure that the copyright system does not stand in the way of these important technological developments.

This contribution analyses the copyright issues related to so-called "generative AI" systems and reviews the arguments currently being advanced to change the copyright regime for AI-generated works. To do so, the underlying human rights framing intellectual property laws are used as the starting point from which a

Christophe Geiger is a Professor of Law at Luiss Guido Carli University, Rome (Italy) and President of the International Association for the Advancement of Teaching and Research in Intellectual Property (ATRIP); Global Hauser Visiting Faculty, New York University School of Law, US (Fall 2023); Spangenberg Fellow in Law & Technology at the Spangenberg Center for Law, Technology & the Arts, Case Western Reserve University School of Law (Cleveland, US). Earlier versions of this article were presented in September and October 2023 in the context of work-in-progress workshops at the Engelberg Center on Innovation law and Policy NYU School of Law; at the Spangenberg Center for Law, Technology & the Arts at Case Western Reserve University School of Law (Cleveland); and at American University's Program on Information Justice and IP, American University Washington College of Law (Washington D.C.). The author would like to thank the organizers and participants of these events for their invitations and helpful comments. The author is also very grateful to his research assistants at the NYU School of Law, Nyusha Shafie and Raphael Weiss, for their great editorial assistance and their enthusiasm during the elaboration process of the article.

C. Geiger (✉)
Ph.D., Professor of Law, Luiss Guido Carli University, Rome, Italy
e-mail: cgeiger@luiss.it

balanced copyright framework for generative AI could (and even should) be derived. It follows from the applicable human rights framework for copyright, but also from the anthropocentric approach of human rights, that the protection of creators and human creativity must be considered the point of reference when assessing future reforms with regard to copyright and generative AI systems. This approach establishes generative AI systems as an instrument of the human creator – and not as a substitute. It also reinforces the notion that copyright should be a tool to protect creativity and creators, not a legal mechanism to secure the amortization of economic investments in AI technology. As a consequence, it is argued that the copyrightability of AI-generated outputs should be considered with utmost care and only when AI is used as a technical tool for creators in their creation process – in other words, when they can serve a human author. At the same time, AI systems are here to stay, and their development should not be inhibited, as they can have many beneficial aspects (including for creators) if appropriately regulated.

The right to train generative AI systems via machine learning technology can be derived from the right to science and culture and freedom of (artistic) expression (Arts. 19 and 27(1) Universal Declaration of Human Rights (UDHR); Art. 15(1)(a) and (b) International Covenant on Economic, Social and Cultural Rights (ICESCR); Arts. 11 and 13 EU Charter of Fundamental Rights (EUCFR)), as AI can lead to useful advances in science and the arts; moreover, it is important for human creators to be able to use outputs produced by generative AI in their creative process. This grounding is even stronger when the training is conducted for research purposes, as the training process can then also benefit from the fundamental right-to-research justification. However, since a large quantity of copyrighted works is required for the training of generative AI systems, a remuneration obligation for these uses arises from a human rights perspective, in particular when AI systems have a commercial purpose. It follows from the right to the protection of the creator's moral and material interests (Arts. 27(2) and 17 UDHR, 15(1)(c) ICESCR; 17(2) EUCFR, 1 Protocol No. 1, 8 European Convention on Human Rights (ECHR)) that authors must be adequately remunerated for the commercial use of their works unless there is a strong justification legitimizing the use. For this reason, it is proposed that the machine learning process using copyright-protected works to train the AI gives rise to a limitation-based remuneration right to the benefit of human creators. The article also briefly explores if and when the moral interest of creators deriving from human rights protection could justify their opposition to the use of their work for the purpose of training AI systems. It is argued that the weaker the fundamental rights claim to train the AI is, the stronger the moral rights claim could be. For example, training an AI to produce works for discriminatory or racist purposes will benefit from a weaker (if any) fundamental rights protection, but will potentially raise important moral concerns of the author of the work used for training purposes.

More generally, the article concludes that in order to secure a vibrant space for culture and creativity, (finally) cherishing and putting the Human Author at the center of the copyright system is necessary (and not only to erect fences to the benefit of copyright industries, which could be the unfortunate result of the recent first broad regulatory intervention on AI by the EU, the so-called "Artificial Intelligence Act"). In doing so, it might be possible in the future to have AI-systems that serve creators and creativity, and not the other way around.

Keywords AI · Human rights · Copyright · Remuneration rights

1 Introduction

"Do you believe in the human heart? I don't mean simply the organ, obviously. I'm speaking in the poetic sense. The human heart. Do you think there is such a thing? Something that makes each of us special and individual?" This is a question put to Klara, the narrator of Kazuo Ishiguro's novel *Klara and the Sun*, who is an "artificial friend" – an artificial intelligence (AI)-operated android - that, in a not-too-distant future imagined by the author is meant to replace companions for children.[1] This philosophical question also lies at the heart of the question of the protectability by copyright of AI-generated outputs by generative AI systems: is there something in the human creative process that makes it unique and different from any output generated by a machine? As more and more works are produced by machines using AI, with a result that is often difficult to distinguish from that of a human creator, the question whether the creative input of the author – that moment of creative genius generated by the human mind, guided by intuition and inspiration – should be the generator of copyright protection has become central. It requires the identification and definition of what is an act of creativity,[2] but also poses more fundamental questions on what the copyright system should achieve. Does the copyright system protect authors – human authors – and remunerate them as a counterpart for their contribution to collective cultural enrichment generated by their creations, or is copyright intended as an incentive to invest in the process of cultural production, no matter how the work has been generated?[3]

The issue is far from purely theoretical. It was at the root of a now famous dispute in the United States between Dr. Stephen Thaler[4] and the U.S. Copyright Office, when he wanted to register a work entitled "A Recent Entrance to Paradise" produced independently by an AI called "DABUS" of which he was the owner, user and designer. Having had his application rejected by the Copyright Office for the first time in 2019, he filed a petition for reconsideration of his application with the same Office.[5] In its decision of 14 February 2022, the Office upheld the refusal to

[1] Ishiguro (2021).

[2] For a reflection on this issue, *see e.g.* Craig and Kerr (2020). However, some advocates of protecting AI-generated creations through copyright law have pointed out that the notion of creativity has not yet been clearly identified; for example, according to Abbott and Rothman (2023), p. 30, it is problematic to consider that only human beings can "create" and thus draw legal consequences from it: "There is no scientific, or even philosophical, consensus on the nature of creativity. Without a clear understanding of creativity and thus what the difference is between what an AI and a human being are doing, it seems problematic to argue that only what people are doing counts as creative – and even more problematic to base laws on that assumption".

[3] We have repeatedly (critically) discussed these rationales and the deplorable trend of IP rights to become investment-protection mechanisms, *see e.g.* Geiger (2016a), p. 74; Geiger (2022b). And in the context of investment law, *see e.g.* Geiger (2020a, b); Geiger (2023a).

[4] Dr. Thaler has initiated numerous lawsuits also seeking to have an AI recognized as an inventor under patent law. For further references, *see* Abbott (2022).

[5] On the details of the case, *see* Abbott and Rothman (2023), p. 15.

register the work produced by the AI, pointing out that "only a human being can be considered an "author" under US copyright law, this quality being a prerequisite for the protection and registration of the work".[6] Dr. Thaler challenged that rejection and filed a complaint to the Federal District Court.[7] His motion for summary judgment seeking to register a copyright for the AI-generated work was denied on 18 August 2023, the Court confirming "that the Copyright Office acted properly in denying copyright registration for a work created absent any human involvement".[8] This decision could be the first episode in a long judicial journey, as it is likely that other courts will be seized in several jurisdictions with similar requests aimed at recognizing the authorship of an AI, obviously with the goal of vesting its owner (or the economic actors who designed, developed and/or financed it) with ownership of the said right.[9] Of course, copyright regimes differ on both sides of the Atlantic, but it is worth asking how such a dispute would be resolved in Europe, as it is likely that similar questions will soon be taken to court in the EU as well. Moreover, legislators on both sides of the Atlantic are already being urged to extend copyright protection or other legal tools based on exclusivity to AI-generated output and it is likely that reform proposals will be put forward in the near future.[10] When designing this new

[6] "Human authorship is a prerequisite to copyright protection in the United States and [that] the Work therefore cannot be registered", https://www.copyright.gov/rulings-filings/review-board/docs/a-recent-entrance-to-paradise.pdf; similar refusals of registrations for AI generated works have since been issued on the same ground by the U.S. Copyright Office. *See* for example the decision of 21 February 2023, *Zarya of the Dawn*, holding that the text of a graphic novel (as well as the selection, coordination, and arrangement of the novel's written and visual elements) could be registered as protected by copyright law, but not the illustrations that were generated by an AI (Midjourney), since "the images are not the product of human authorship" (https://www.copyright.gov/docs/zarya-of-the-dawn.pdf). *See also* the decision by the Review Board of the USCO on 5 September 2023, which confirmed the refusal to register the work generated by Midjourney "Théâtre D'opéra Spatial" (SR No. 1-11743923581) as the result was too much "machine" and not enough "human", despite the applicant having argued that he had input at least 624 prompts and reworked the output of Midjourney to achieve the final result. For a critical comment, *see* Lee (2024), arguing that the U.S. Copyright Office practice of excluding AI-generated works from copyright registration is wrong.

[7] DDC 2 June 2022, 1:2022cv01564 – *Thaler v. Perlmutter et al.*

[8] United States District Court for the District of Columbia, 18 August 2023, Civil Action No. 22-1564 (BAH). According to District Court Judge B. A. Howell, "Copyright has never stretched so far, however, as to protect works generated by new forms of technology operating absent any guiding human hand, as plaintiff urges here. Human authorship is a bedrock requirement of copyright". An appeal brief was however filed on 22 January 2024 in the U.S. Court of Appeals for the District of Columbia Circuit (Case No. 23-5233), the claimant arguing that allowing protection for AI-generated works would support the goals of copyright law.

[9] The question of ownership of the right is fascinating but distinct from the question of potential protection. Indeed, before defining who can be the owner of the copyright on this production, it is necessary to establish whether or not a work generated by an AI can in itself benefit from copyright protection. This is the question that was repeatedly put to the U.S. Copyright Office and on which we will focus here.

[10] For the OECD´s policy consideration on generative AI, *see* Lorenz et al. (2023). *See also* the ongoing work of the Commissioner for Human Rights of the Council of Europe in ensuring that human rights are strengthened and not undermined by artificial intelligence in her dialogue with national authorities, national human rights structures and AI actors in general, available at https://www.coe.int/en/web/commissioner/thematic-work/artificial-intelligence, as well as the "Draft Framework Convention on Artificial Intelligence, Human Rights, Democracy and the Rule of Law" of the Committee on Artificial Intelligence of the Council of Europe, Strasbourg, 18 Dec. 2023,

copyright framework for generative AI, legislators can find guidance in the underlying human rights norms, and the principles behind them should lead the way.[11]

2 The Human Rights Framework for Copyright and Generative AI

Human rights are included in international and regional agreements as well as in national constitutions. They bind the legislature, as they rank very high in the hierarchy of norms, forming the roots of positive law;[12] thus, human rights have to be considered by lawmakers and judges when conceiving any legal framework applicable to a new technological, social or economic situation. Rooted in ethical principles, fundamental rights offer possibilities for a balanced development of intellectual property law. In fact, the rise of the use of human rights and fundamental rights in shaping and using intellectual property norms has led in the last 20 years or so to a "constitutionalization" of intellectual property law,[13] helping to design most recent evolutions in the digital environment under the heading of what is increasingly understood as "digital constitutionalism".[14] Despite being improvable,[15] the constitutionalization of IP law has brought major advances for a balanced conceptualization and application of IP law and still can offer a useful framework for the major future developments in the field, such as for example platform regulation, online access to information and research, or artificial intelligence.[16] Moreover, it offers a transparent and workable methodology for mitigating conflicts of rights and secures a perspective on innovation law rooted in the core values of the legal systems,[17] a field too often subject to influence from sectorial interests. It is argued here that human rights can (even must) serve as an effective framework to define an ethical copyright regime applicable to artificial intelligence (AI), in particular generative AI.

Footnote 10 continued
available at: https://rm.coe.int/cai-2023-28-draft-framework-convention/1680ade043. And the "Recommendation on the ethics of artificial intelligence" adopted by the General Conference of the United Nations Educational, Scientific and Cultural Organization (UNESCO) in November 2021, which according to its preamble is "a standard-setting instrument developed through a global approach, based on international law, focusing on human dignity and human rights", available at: https://unesdoc.unesco.org/ark:/48223/pf0000380455.

[11] On the human rights implications of AI more generally, *see* Quintavalla and Temperman (2023).

[12] *See* Mylly (2005), emphasizing that fundamental rights "provide the basic set of the most fundamental norms and principles to which all areas of law are connected. They thus play a particular role in the pursuit of coherence. Accordingly, private law and fundamental rights should be seen in a dialogical relationship: rather than eliminating choice, autonomy and experimentalism, such a dialogue enables the realisation of certain basic values".

[13] Geiger (2006); Geiger (2012); Geiger (2020a); Griffiths (2013); Griffiths (2018); Mylly (2015); Schovsbo (2015); Geiger and Izyumenko (2020a).

[14] On the notion of digital constitutionalism, *see* Pollicino (2021); De Gregorio (2022). Further in the IP context, *see* Geiger and Jütte (2024); Geiger and Jütte (2022); and with a specific link to generative AI, *see* Geiger and Iaia (2023).

[15] Geiger and Izyumenko (2020b); Mylly (2018).

[16] Geiger (2023b).

[17] For further discussion of the principle of proportionality used to mitigate conflicts between fundamental rights *see* Christoffersen (2015); Fischman Afori (2014); Geiger and Izyumenko (2018); Geiger and Izyumenko (2020a). For a critical assessment, *see* Mylly (2020).

In general, copyright protection can be derived from provisions protecting the right to science and culture,[18] the right to freedom of (artistic) expression,[19] the right to protection of the author's moral and material interests,[20] and the right to (intellectual) property.[21] These human rights provisions have in common an anthropocentric approach, the *human* author being at the center of the protection.[22] Consequently, a human rights perspective mandates that the protection of creators and human creativity is considered as the point of reference when assessing future reforms concerning copyright and generative AI. With regards to the right to intellectual property under Art. 17(2) EU Charter of Fundamental Rights (EUCFR), it is to be noted that the wording of the provision as such makes no explicit reference to the human creator.[23] It could thus be argued that the scope of protection also includes beneficiaries other than the creator himself. However, Art. 17(2) EUCFR must be interpreted in the light of other international human rights provisions which clearly centralize the protection of the human *creator*. Further, the concept of the social function of intellectual property law must be taken into account when interpreting this provision. It follows that copyright protection should be granted to the extent it serves the public interest,[24] human creativity rather than investment being the triggering factor for protection, which leads also to an author-centric approach.[25] In contrast, the afore-mentioned constitutional rights do not grant protection for machines or for those who operate them. Generative AI as such does not enjoy human rights protection; thus, from a human rights perspective, the protectability of its results will be dependent on the degree of the human creator's involvement.

[18] Arts. 27(1) of the Universal Declaration of Human Rights, 15(1)(a) of the International Covenant on Economic, Social and Cultural Rights, 13 of the European Union Charter of Fundamental Rights. *See* on the right to culture, Geiger (2016b).

[19] Arts. 19 of the Universal Declaration of Human Rights, 15(1)(b) of the International Covenant on Economic, Social and Cultural Rights, 11 of the European Union Charter of Fundamental Rights.

[20] Arts. 27(2) of the Universal Declaration of Human Rights, 15(1)(c) of the International Covenant on Economic, Social and Cultural Rights.

[21] Art. 17 of the Universal Declaration of Human Rights; Arts. 17(2) of the European Union Charter of Fundamental Rights; 1 Protocol No. 1 to the European Convention on Human Rights. Further on the human rights justifications for intellectual property and their roots in human rights law *see* Geiger (2015).

[22] *See* in particular with regard to the international human rights framework, UN Committee on Economic, Social and Cultural Rights (CESCR) (2006) in particular para. 7; UN General Assembly, Report of the Special Rapporteur in the field of cultural rights, Farida Shaheed (2014) in particular para. 90, emphasizing that a "human rights perspective focuses attention on important themes that may be lost when copyright is treated primarily in terms of trade: the social function and human dimension of intellectual property, the public interests at stake, the importance of transparency and public participation in policymaking, *the need to design copyright rules to genuinely benefit human authors*" (emphasis added), and that "the right to protection of authorship is the right of the human author(s) whose creative vision gave expression to the work. Corporate right holders must not be presumed to speak for the interests of authors" (para. 99).

[23] "Intellectual property shall be protected.", Art. 17(2) of the European Union Charter of Fundamental Rights. *See* specifically, Griffiths and McDonagh (2013); Geiger (2009).

[24] On the social function of intellectual property protection, *see* Geiger (2013); Geiger (2015); on the philosophical foundation, *see* Gervais (2015).

[25] *See* Geiger (2022b).

As outputs produced by generative AI can be beneficial to human creators in their creative process, the training of AI systems is essential to enable human beings to explore new avenues of artistic expression that are still unknown. It should be made clear that freedom of (artistic) expression concerns exclusively human beings, considering that, at least under the current state of the law, AI does not enjoy the afore-mentioned constitutional rights, in particular no right to free expression.[26] "This implies that the interest in the flourishing of the generative AI industry remains instrumental to the end objective of increasing human artistic freedom of expression".[27]

Moreover, the outputs produced by generative AI can lead without any doubt to useful advances in science and the arts that benefit society at large and hence can fall under the protection of the right to science and culture.[28] Accordingly, a right to train AI systems for artistic and scientific purposes can be derived as a principle from the underlying human rights framework. The human rights grounding is even stronger when the training is conducted for scientific and research purposes, as the training process can benefit additionally from the fundamental right-to-research justification.[29]

In order to train these generative AI systems, a large amount of copyrighted works is required. It follows from the right to the protection of the creator's material rights under Arts. 27(2) Universal Declaration of Human Rights (UDHR), 15(1)(c) International Covenant on Economic, Social and Cultural Rights (ICESCR), and the right to (intellectual) property, under Art. 17 UDHR, Art. 17(2) EUCFR, 1 Protocol No. 1 European Convention on Human Rights (ECHR),[30] that the author must be fairly renumerated in the event of the commercial use of his work in the absence of justifications to do so that derive from competing human rights.[31] As argued previously, "a conceptualization of copyright within the

[26] Sunstein (2023).

[27] Geiger and Iaia (2024).

[28] *See* in this spirit Dreyfuss (2023), who argues that the right to "share in scientific advancement" must be re-interpreted as a right to participate in the enterprise of scientific advancement.

[29] For a conceptualization of the fundamental right to research emerging from norms, concepts, interpretations and understandings present in the fundamental rights of the ECHR and the CFREU, as well as international human rights instruments, including the UCDHR, the ICCPR, and the ICESCR, *see* Geiger and Jütte (2023a). *See also*, with regard to international law, Samtani (2023).

[30] *See* United Nations Human Rights Office of the High Commissioner (2023b), p. 7, exploring the human rights risks stemming from the development, deployment, and use of generative AI technology: "Generative AI models' ingestion of large quantities of data may entail adverse impacts to individuals' right to own moral and intellectual property. Training processes for some generative AI models may involve the unauthorised use of protected works, adversely impacting those works' original authors' right to own property. The capacity of generative AI systems to create content that mimics existing works by human creators also threatens original authors' property rights".

[31] According to the case law of the ECtHR, there will for example arguably be a strong justification for the use whenever it falls within the core of freedom of expression and thus is likely to prevail in a proportionality assessment, when the use of the work *e.g.* concerns political, scientific and artistic expression/ debate as well as the information of the public on matters of public interest, and does not encroach on the very core of another competing right such as the right to property (*see* for a detailed discussion of the balancing criteria used by the Strasbourg Court, Geiger and Izyumenko (2014). These situations do not lead to any payment, and this is why several exempted uses in copyright law are free

constitutional right to science and culture, to freedom of expression and artistic creativity and even within a socially rooted property clause […] should lead to the recognition of an overarching and unwritten right for creators to be remunerated for the commercial exploitation of their work. This right should be understood as a fundamental and binding principle of copyright law deriving from fundamental rights and from copyright's social function, and would thus have to be recognized by legislators through the implementation of appropriate mandatory copyright contract rules or statutory remunerations rights; it could also be used by the judiciary as an interpretation tool of existing rules to redress unfair remuneration situations for creators, or, in their absence, even beyond as a general principle of law".[32] In contrast, the mere amortization of economic investment in AI technology can under no circumstances be derived from a fundamental rights perspective.

Beyond the protection of the author´s material interests, the human rights framework also confers the protection of moral interests, under Arts. 27(2) UDHR, 15(1)(c) ICESCR.[33] More generally, moral rights can emanate from the need to protect the authors´ dignity and personality[34] – values that underly various fundamental rights in the human rights treaties. The protection of the author´s moral interests can be allocated to the right to privacy and personal integrity or to the so-called "negative" aspect of the right to freedom of expression.[35] In the tension between copyright and generative AI training, the moral right of the author could justify a right to oppose the use of his work in certain (limited) circumstances. In fact, the weaker the fundamental rights claim to train AI is, the stronger the moral rights claim can be. For example, training an AI to produce works for discriminatory or racist purposes will benefit from a weaker (if any) fundamental rights protection, but will potentially raise important moral concerns of the author of the work used for training purposes.

Footnote 31 continued
uses and should always remain so. However, it is to be noted that for other, less straight-forward situations "the payment of remuneration arguably mitigates the density of the freedom of expression's conflict with property of copyright owner and thereby increases the chances that the freedom of expression-based use would prevail (and "fair use" will accordingly be found)" (Geiger and Izyumenko (2019)).

[32] Geiger (2022a). In this spirit, *see also* Farida Shaheed (2014), para. 100: "Merely enacting copyright protection is insufficient to satisfy the human right to protection of authorship. States bear a human rights obligation to ensure that copyright regulations are designed to promote creators' ability to earn a livelihood".

[33] By contrast to the international human rights law instruments at European level, an elaborated and balanced clause for IP protection which includes moral rights is lacking, *see* Geiger and Izyumenko (2023).

[34] *See e.g.* Hugenholtz (2001), p. 346 (pointing to the German judicial practice and doctrine that recognize implied constitutional underpinnings for moral rights by situating the interest in their protection in the German Constitution's rights to dignity and self-fulfillment); Drexl (2007) (highlighting that, according to the continental copyright tradition of author's rights, "the copyrighted work is considered an emanation of the creator's personality". *See also* Hughes (2018) (exploring the concept of moral rights with reference to the fundamental right to human dignity); Geiger (2004), p. 129; Geiger (2020a), p. 137 (in particular Fn. 79).

[35] Geiger and Izyumenko (2023).

In short, these general principles deriving from the human rights framework, notably the centrality of the human creator, should inform the copyright reforms with regards to generative AI systems.

3 The Protectability of AI-Generated Works

Before considering the policy question of whether (or not) it is desirable to protect works generated by AI, it is interesting to analyze if *de lege lata* an AI-generated work can already meet the conditions for protection.

In order to be protected, it is obvious that the work generated by an AI must meet the conditions set forth by copyright law. Many (excellent) writings have recently been devoted to this issue, so that a detailed analysis will not be conducted here.[36] Let it just be recalled that according to copyright law, the condition is twofold: first, there must be a protectable "work" and second, this work must be "original".[37] What is a "work" is generally not defined by the legislator at national, EU or international level; however, it is commonly accepted that human intervention is necessary for a work to be protected under copyright law. According to some authors, this obviously stems from copyright law's emphasis on the creator, whose creative act is the generator of the protection granted.[38] In fact, the notion of originality, defined by the Court of Justice of the EU as the "author's own intellectual creation",[39] implies creative choices.[40] This inevitably necessitates the ability to make conscious decisions, thus requiring a "mind", a "heart" or a "soul", to use Kazuo Ishiguro's poetic imagery quoted above.[41] In a less poetic way, this is exactly what the U.S. Copyright Office recalled when it held that for a work to be

[36] *See* notably Hugenholtz and Quintais (2021); Gervais (2020); Ginsburg (2018); Ginsburg and Budiardjo (2019); Guadamuz (2021); Gervais (2022); Frosio (2022); Vivant (2018); Dusollier (2020); Bensamoun (2020); Binctin (2020).

[37] On this latter condition in the context of AI generated or AI-assisted works, *see* Iaia (2022).

[38] *See* in this sense, notably, Gervais (2020); Hugenholtz and Quintais (2021); Ginsburg (2018).

[39] CJEU – Judgment of 16 Jul 2009, C-5/08 (*Infopaq*), para. 37.

[40] The link with the human author is even more present in the definition of originality according to French copyright law, where it is understood as "the imprint of the personality" of the author. *See* in this sense, Vivant (2018), emphasizing that according to a "personalist" copyright conception, it is the imprint of the personality of the author that makes a work protectable by copyright law, and this personality is necessarily and intrinsically linked to a human person.

[41] *See* in this sense Keller (2022), who points out, about image-generating AIs: "On a fundamental level, they are – like all other computers – copying machines. While there is a lot of hype and awe around the new crop of image generators that can indeed generate stunning visual output in reaction to textual prompts fed into them, this does not mean that they are somehow capable of independently creating works of art". *See also* Samuelson et al. (2023): "An AI system can't produce works that reflect its own "original intellectual conception" because an AI system is incapable of having one. AI systems do not "think" or "create" as we understand those terms in the context of human mental processes. Rather, AI systems employ math to make predictions […]. Thus, the notion of AI being recognized as an author is a doctrinal non-starter".

protectable, it must emanate from a human being.[42] The Office had already decided in a similar way when specifying that a photo taken by a monkey cannot be registered as a work.[43] Reference is made here to the famous self-portrait taken by a monkey, the "Monkey Selfie", which had given rise to a dispute over copyright ownership of the photo between the photographer who owned the camera used by the said monkey and the association PETA (People for the Ethical Treatment of Animals).[44] Therefore, the question: "Is a work produced exclusively by an AI protected by copyright?" can be answered negatively based on current understanding of copyright law.[45]

That said, it would be wrong to stop there. As a study conducted for the European Commission has pointed out, although a work solely created by an AI cannot be protected by copyright, works for which the creators use the AI as a tool in the production process can be, provided of course that the conditions of originality and the existence of creative choices are met.[46] With regard to copyright principles, this is nothing new, since it is accepted that an author can use a computer program or a machine for the realization of his/her creation from the moment he/she makes creative choices. This does not exclude an element of randomness in the result when it is consciously included in the creation process. The photographer presses the button, but it is the camera (and its various functions, often automatic, such as filters) that takes the picture.[47] Sometimes, moreover, it is the creator's choices alone that will be at the origin of the protection granted. Contemporary art provides

[42] *See also* the U.S. Copyright Office Guidelines (2021), para. 306: "The Human Authorship Requirement: The U.S. Copyright Office will register an original work of authorship, provided that the work was created by a human being. The copyright law only protects "the fruits of intellectual labor" that "are founded in the creative powers of the mind". Because copyright law is limited to "original intellectual conceptions of the author", the Office will refuse to register a claim if it determines that a human being did not create the work".

[43] Ibid., para. 313.2: "Works That Lack Human Authorship: The U.S. Copyright Office will not register works produced by nature, animals, or plants. Examples: A photograph taken by a monkey".

[44] *Naruto v. Slater*, 888 F.3d 418, 437 n.11 (9th Cir. 2018). The Court did not rule on the merits, as the association's action on behalf of the monkey against the photographer was dismissed on procedural grounds.

[45] A notable exception is the United Kingdom's Copyrights, Designs and Patents Act (CPDA) of 1988, which allows protection for "computer-generated works", these works being defined according to Sec. 178 CPDA as works "generated by computer in circumstances such that there is no human author of the work". According to Art. 9(3) of the same Act, "the author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken". This provision has, however, been considered by some authors as being in contradiction with Sect. 1 of the same Act which specifies that copyright subsists in "original literary, dramatic, musical or artistic works". According to Blaszczyk (2023a), the UK Copyright Act "provides for protection of authorless works, ascribing authorship to the person making the necessary arrangements, but according to Sec. 1, without authorial originality, no works are protectable. In this way, the contradictions of the statutory text mirror the contradiction involved in the very concept of "emergent" or "authorless" works. Without a human author, there is no expression of ideas that can be original, and thus no copyrightable work. The concept of computer-generated works is thus logically inconsistent and incoherent with all of copyright's doctrinal architecture". *See also* in this sense Blaszczyk (2023b).

[46] Hugenholtz et al. (2020); For a synthetic version of the study, *see* Hugenholtz and Quintais (2021) and its comment by Geiger (2022c).

[47] For such an analogy, *see* Laser (2023).

numerous illustrations of this. When Duchamps "chooses" a commercially purchased urinal for display, it is the choice, not the making, that constitutes the creative act at the origin of the copyright. In the context of databases, it is the creative choices in the arrangement, selection and presentation of the database that will trigger copyright protection.

To return to AI-generated "works", human creative intervention can occur at different stages of their production: Hugenholtz et al. proposes to distinguish the "conception" (design and specifications), the "execution" (producing draft version) and the "redaction" (selecting, editing, refinement, finalization).[48] The latter corresponds to the stage of finalization of the work, which will see the AI-generated result reworked, refined, edited and modified by human intervention (which, if it is creative and meets the conditions of copyright, can lead to copyright protection).[49] As the condition of originality is usually quite easily met, judges often finding creativity in productions with a very low personal touch, the exclusion of protection for AI-generated works could be circumvented quite easily as long as there is creative human intervention in the final result.[50] For these reasons, several scholars have considered that there is no need for legislative intervention at the EU or US level because the current copyright framework already allows for protection of most AI-generated works.[51]

Thus, the question arising from a *de lege lata* perspective is *how much* human creative intervention on the AI-generated output is necessary to trigger copyright protection. There is certainly a grey zone here that will lead to difficult case-by-case decisions.[52] AI technology is already frequently used by artists in their creative

[48] Hugenholtz et al. (2020). *See also* Bulayenko et al. (2022), p. 109: "Absent additional transparency measures, an accurate substantive assessment of originality will require reverse engineering of the human interventions or contributions in the use of the AI system leading to a certain output".

[49] *See also* Fenwick and Jurcys (2023), describing "an iterative, dynamic process of *conception, prompting, generation, refining,* and *deployment* to characterise creativity in this context".

[50] *See* in this sense for the US (but with a comparison to the EU), Lee (2023): "As the Supreme Court elaborated in *Feist*, the proper test of authorship examines whether the person contributes, at least, a *minimal level of creativity* in the origination of the work, which may be satisfied simply by a person's selection or arrangement of elements in the work. The requisite level is, as the Court recognized, "extremely low," or the bare minimum to qualify as an author" (emphasis added).

[51] For the EU: Hugenholtz et al. (2020); Fenwick and Jurcys (2023) who "contend that copyright – specifically the concept of originality as articulated in US federal law – is a sufficiently durable legal mechanism that can manage these new cultural forms, and that the two basic requirements of modern copyright law (a tangible medium of expression and a modest degree of creativity) remain relevant in identifying the scope of legal protection"; Saiz García (2019), analyzing "the possible protection of AI-created works under existing copyright law without the need for modification because there is human activity behind them"; Militsyna (2023), concluding that in "many cases of using AI to create output human creative participation remains sufficient for copyright protection eligibility"; in the US, *see e.g.* Samuelson et al. (2023) p. 3: "We see no need for special copyright or sui generis rules for AI".

[52] In this sense, a recent decision of the Beijing Internet Court of 27 Nov. 2023 (*Li v. Liu*) seems extremely worrying, as it granted copyright protection for an image generated by a text-to-image generative AI to the user of the AI, based on the fact that he "made a certain degree of intellectual investment" in selecting and arranging the inputs (*i.e.*, a series of creative prompts and parameters that generative AI users feed into the AI system to facilitate an output based upon such inputs)" (English translation of the parts of the decision are available at https://www.ailawandpolicy.com/2023/12/computer-love-beijing-court-finds-ai-generated-image-is-copyrightable-in-split-with-united-states/#_ftn1). As discussed, admitting such a low

process, and AI-based artistic practices are likely to increase in the future.[53] As an illustration, the Museum of Modern Art (MoMA) has recently acquired Refik Anadol's artwork "Unsupervised – Machine Hallucinations", marking the first time the institution has ever added a work created using mainly AI technology to its collection.[54] According to the digital artist, he has utilized machine intelligence as a "collaborator of human consciousness […] to unfold unrecognized layers of our external realities."[55] In order to generate the piece, Anadol and his team trained the AI with vast amounts of data (including copyright protected works) from digital visual archives of the MOMA and other publicly available sources, then output a series of ever-shifting audiovisuals that reinterpret, alter, and riff on those original works.[56]

The "copyrightability" of this particular work has not (yet) been discussed or questioned; however it can be expected that such challenges will be made in the future. It is thus to be hoped that in order to distinguish the protected from the unprotected output, the human creativity factor will be decisive, and protection granted only when the human creative input is *predominant* in comparison to that by the machines in the end result: in short, where it can be clearly demonstrated that the

Footnote 52 continued
degree of human intervention is highly problematic as it offers an open door to copyrightability to AI-generated works with potential negative effects on human creativity (for a criticism *see also* Zhang (2023). It remains to be seen, however, if such decision will be confirmed by higher courts, as the Beijing Internet Court is a low-level institution. As we have seen, this decision also contradicts the practice of the US Copyright Office, according to which prompts are not sufficient as creative human inputs to trigger copyright protection (*see* the decision on Midjourney "Théâtre D'opéra Spatial", *supra* note 6, refusal to register despite the applicant having argued that he had input at least 624 prompts and reworked the output of Midjourney to reach the final result).

[53] *See* in this sense Fenwick and Jurcys (2023) stating that "while hybrid-networked (*i.e.*, human – corporate – machine) *creators* have always created hybrid-networked cultural *forms* (*i.e.*, creations that blend human and technology-constituted elements), such hybridity becomes increasingly visible and complex in the context of a new world of generative AI. At the very least, earlier – and influential – models of creativity as human-driven involving creation *ex nihilo* become harder to sustain in a new age of generative AI".

[54] *See* https://www.artforum.com/news/moma-acquires-refik-anadols-unsupervised-517497/.

[55] *See* https://refikanadol.com/works/unsupervised/.

[56] In the field of music, an illustration of the use of GenAI in electronic music can be seen in one of the French DJ David Guetta's music compositions played live, in which he uses generative AI tools to create lyrics and a voice in the style of the rapper Eminem, which he then mixes over own-produced electro beats (*See* Fenwick and Jurcys (2023), according to which this example "reveals something more general about creativity in a digital age" and concluding that "copyright law should remain an important mechanism to facilitate genuine creators who are using AI systems in innovative and unique ways to push the boundaries of their creativity"). The use of one's voice or image can however be very problematic from the perspective of protection of the fundamental right to personality (concerns are often raised in the context of so called "deep fakes", *see e.g.* Judge and Korharni (2021); Tyagi (2023). This topic, however important, goes beyond the scope of this article and will not be addressed.

machine was strictly used as a tool in a human creative process,[57] that the end result was "AI assisted" and not "AI-generated", the burden of proof lying on the party claiming copyright protection.

Putting human creativity at the center of the copyrightability question does not, however, answer the question from a policy perspective if this should be a desirable result.[58] In fact, some authors have argued that it would be necessary to overcome the hurdle of human intervention to protect AI-generated creations.[59] The discussion is admittedly not entirely new and recalls the "copyright without author"[60]-debates held at the time when copyright protection for computer programs was introduced.[61] According to others, a more cautious approach needs to be taken and access to copyright protection strictly limited, at least until the desirability of an extension is clearly established.[62] This question is obviously most complex, and the answer might depend, *inter alia*, on the evolution of the technology and its future uses. However, it is worth briefly recalling some of the arguments made by each side, to the extent that an evolution of copyright law is now often required.

4 The Desirability of Granting Copyright Protection to AI-Generated Works

As Professors Vivant and Bruguière have written, "*de lege ferenda*, the discussion is open".[63] However, the decisions to be taken are so fundamental for the future of our society that the conversation cannot be had with lawyers alone; any reform would also have to rely on independent and serious impact assessments to establish its benefit. Too often in the past, legislative interventions were conducted under the influence of sectorial interests, without taking into account the potential consequences of such interventions on the innovation ecosystem or their implications on

[57] On the distinction between sufficient and insufficient human creative participation, *see* Militsyna (2023). *See also*, Samuelson et al. (2023), p. 2: "Humans using AI as a tool of expression may claim authorship if the final form of the work reflects their "original intellectual conception" in sufficient detail". According to these authors, even "refining a series of text prompts and choosing among different outputs should also be recognized as a way in which a human using Generative AI could meet the authorship standard".

[58] *See* in this sense, Keller (2022): "the real question we should ask in response to the emergence of this new class of visual creations is not if copyright applies to them, but rather if treating them as copyrighted works can possibly result in societal harm".

[59] *See* in particular Abbott and Rothman (2023); Varytimidou (2023): "Nowadays art can be created by algorithms and continental Europe's copyright law […] no longer seems fit for purpose, persisting as it does in searching for a human behind each creative outcome".

[60] Gaudrat and Vivant (2004), p. 44. *See also* Bruguière (2020).

[61] With regard to computer generated works *see* already the foundational work of Samuelson (1986).

[62] *See* for example Gervais (2022); Ginsburg (2018); Craig (2022); Samuelson et al. (2023). In the context of automated journalism, *see* Trapova and Mezei (2022) demonstrating "that the extent to which European journalism relies on assistive and generative technologies to produce written output does not justify, from a copyright perspective, the changing of the current anthropocentric copyright system"; "The current copyright framework is rooted in the presence of a human author and that should remain to be so. The absence of free and creative choices should not be artificially compensated by considerations for potential market failures if copyright protection does not arise for robojournalism output".

[63] Vivant and Bruguière (2019), p. 164.

society.[64] A good example is the damage caused at the time by the proposed Directive on computer-implemented inventions, for which the European Commission ignored the vast majority of economic studies on the issue (including those commissioned by the Commission itself), which had pointed out the potential negative effects in terms of innovation that the broad patenting of computer programs might cause, and urged the legislator to be cautious.[65] The result: the Commission went ahead, leading to the most radical rejection by the European Parliament of an intellectual property legislation in its history; in the meantime, the legal uncertainty on the patentability of computer programs remained, given the unclear judicial practice of the European Patent Office on the issue, which was also detrimental to many economic players in Europe.[66]

Returning to AI, studies on the potential effects on creativity of opening up copyright protection for AI-generated creations are currently lacking.[67] If AI creations were easily protected, this would mean that countless creations would potentially be granted copyright protection, since an AI has almost unlimited production capabilities and can generate an enormous quantity of new works in record time at low cost.[68] This obviously raises the question of the creative spaces remaining for human creators and the potentially very deterrent effect on future creation that such a development would have.

Moreover, a potential change in copyright law needs to be evaluated in the light of the function that we want copyright to fulfill.[69] An AI does not need to be incentivized to produce, it just implements what it has been asked to perform, and this as often as it is asked to. It does not need a break to eat, sleep, or to search for inspiration. In fact, those who emphasize the need to protect AI-generated works,

[64] *See*, in this spirit, our call for the construction of a European intellectual property law based on empirical studies demonstrating beforehand the potential benefits of an intervention by the European legislator, Geiger (2023b).

[65] *See* Hilty and Geiger (2005) with further references.

[66] Geiger (2019).

[67] On the contrary, a recent study by the European Commission highlights the potential negative effects on traditional creative sectors of extending exclusive rights to AI-generated productions: European Commission, Directorate General for Communication Networks, Content and Technology (2022), p. 21: "The feedback received seems to indicate that an additional right in favour of machine-generated outputs might have negative impacts on the traditional creative sectors".

[68] *See* Burk (2023): "Like other cost-saving industrial automation, this can be expected to displace human labor and redefine human roles in production".

[69] *See e.g.* Geiger (2013). For a reflection of AI authorship in the light of copyright's function, *see also* Craig (2022), according to whom it is necessary to resist "calls to extend copyright to cover AI-generated works on the basis that they are not equivalent to the works of authorship that copyright seeks to encourage".

whether by copyright[70] or related rights,[71] do not highlight the need to reward creators but rather the objective of encouraging investment in the field of AI. This well-known mantra has become an almost Pavlovian reflex of investors in an economy now based mostly on intangible assets: "I have invested, so I must benefit from an intellectual property right". The issue is thus closely related to the role of investment protection within intellectual property law. As Reto Hilty et al. have rightly underlined, "potential protection regimes for AI – if ever required – would not be looking at creators or inventors, but at investors", concluding that "most AI applications lack a theoretical justification for creating exclusive rights. If this fact is ignored, such legislation could ultimately lead to dysfunctional effects that have negative impacts on social welfare".[72]

The quasi-systematic push for IP protection is (unfortunately) not a new issue either. As has often been underlined, intellectual property rights tend to progressively shift to become an investment-protection mechanisms.[73] The multiplication of neighboring and *sui generis* rights is surely a consequence of this trend, as is the progressive extension of the scope of protection.[74] However, this multiplication of intellectual property rights, sometimes on the same object, has not remained without consequences and has produced a "legal hamburger in which several layers of rights overlap".[75] These layers consist of legal hurdles to be overcome in the form of multiple authorizations to use, all resulting in potential limitations for those who want to create (not to mention the uncertainty that often surrounds the ownership of rights). To take only one example, the *sui generis* protection for database producers: subsequent evaluations by the European Commission have failed to determine whether the introduction of this right has

[70] *See* in particular Abbott and Rothman (2023), p. 4: "Rather than acting directly on authors, copyright protection will motivate people upstream of the creative act to use and develop AI that will result in more production and dissemination of works"; Besamoun and Farchy (2020).

[71] Senftleben and Buijtelaar (2020); Ramalho (2017); Gervassis and Trapova (2022); Shtefan (2023); Varytimidou (2023) proposing a *sui generis* economic right that "serves as a countermeasure and aims to provide humans with the incentive to continue to invest in AI even though humans will not be deemed to be authors of AGA"; Bonadio et al. (2022), p. 1196, arguing for some kind of *sui generis* right with reference to the precedent of the *sui generis* right for producers of non-original databases granted by the 1996 EU Database Directive; Papadopoulou (2021): "Legislating a sui generis right in order to boost innovation, protect competition and maintain a healthy market for intellectual creations is suggested as the best option".

[72] Hilty et al. (2021). In this sense *see also* Ramalho (2017) stating that "justifications for granting copyright protection do not fit AI creations, and privatization through the grant of (exclusive) rights should not be readily chosen without further thought", and with regard to the creation of a new related right, *see* Duque Lizarralde and Meinecke (2023): "Up to date there is neither economic nor theoretical justification (*e.g.*, deontological or naturalistic), supporting that this related right would incentivize the creation of authorless AI-assisted productions, instead of producing saturation in the market". *See also* Samuelson et al. (2023), p. 3.

[73] *See also* Geiger (2022b).

[74] For a critique of this trend, *see* Hugenholtz (2019a, b); Sganga (2021); Geiger (2022b).

[75] Gaudrat and Vivant (2004), p. 42.

increased the production of databases within the EU.[76] Knowing that once an intellectual property right is in place it is almost impossible to repeal it,[77] past experiences in the EU should lead to a cautious approach before protecting AI-generated productions by copyright and granting rights to investors.[78] On the contrary, the trend toward overprotection of intellectual property rights should prompt prior reflection on the justifications for granting them.[79] If IP rights aim at encouraging creation and protecting creators, creativity – not investment – should be the triggering factor for protection.[80] On the other hand, if the goal is to create mechanisms for investment protection, then the system cannot continue to be based on the generous protection justified by the protection of the human creator, and would need reform.[81]

To sum up: taking the binding human rights framework as guidance for copyright protection leads to an overall cautious approach when protecting AI-generated works by copyright and/or granting rights to investors. AI-generated output "as such" lacks the traditional protectability that human-created works enjoy. An analogy can be drawn with Art. 52 of the European Patent Convention, which specifies certain items that are not regarded as inventions. One of these exclusions concerns computer programs. In a similar vein, it could be decided that AI-generated content, in its raw, unaltered form, may not be considered as a copyrighted work. This exclusion would not prevent the combination of AI and creative human input, but would set a clear signal from the legislator in particular to the judiciary in order to avoid the unwritten condition of human authorship being

[76] In this sense van Eechoud (2021) according to whom the "highly critical 2005 evaluation report of the Database Directive already signaled that the economic impact of the *sui generis* right was unproven, and that it comes perilously close to an undesirable property right in data as such. The database industry (its European powerhouse being the U.K.) then did not favour a repeal of the *sui generis* right and the Commission identified various other drawbacks, so no action followed. The 2018 review of the Database directive and accompanying public consultation perpetuated this stasis. It too concludes there is no proven economic benefit".

[77] *See*, on the topic, Husovec (2020).

[78] In this sense, *see also* the study of the European Commission (2022), p. 21: "The research, interviews, and surveys conducted within the study indicate firstly that no incentive for the use of AI tools in the creative process in the form of additional exclusive rights appears necessary. The already broad deployment of AI tools in the creative context confirms this. The study concludes that a new related right for AI-generated outputs is not desirable"; Bulayenko et al. (2022), p. 113 et seq: "There is no clear case for a legislative action at the level of substantive rules in the EU copyright acquis in the short term as regards AI outputs. Existing proposals for new rights and forms of protection for AI outputs generally lack clear and convincing theoretical and economic justification […] Considering this, we recommend that no new protection regimes for AI outputs are Introduced absent clear and compelling evidence that justifies a change to the status quo"; Drexl et al. (2021), p. 5: "Introducing a new protection regime (*e.g.* a new related right) for AI-generated output is not justified according to the current state of knowledge".

[79] *See* Hilty (2007). But there is a vast body of literature criticizing the expansion of IP rules beyond its traditional borders. *See e.g.* Dreyfuss et al. (2001)

[80] For a recent reflection in this direction *see* Geiger (2022b).

[81] For example, protecting a work for 70 years after the death of the author implies that the event giving rise to the protection is a creation that emanates from an author (human, because the machine does not die). However, if one sets up a "copyright without author", this cannot remain without consequence on the duration of the right. If it is a question of making an investment profitable, the duration can even be very short.

overruled in the future. It would also induce, in the spirit of the exclusion of patentability of computer programs "as such", a higher level of argumentation to show that the human creative input was determinant and predominant in the final result. Only when AI serves as a tool of human creativity could it result in a copyrighted work. In such cases, the unique blend of AI's capabilities and human ingenuity can produce content that is eligible for copyright protection.

However, when determining the scope of protectability, it will be necessary to examine very closely whether these extensions of exclusive control provide sufficient spaces of freedom to guarantee follow-on creations and future creativity. If one wants to incentivize the development of AI-generated creations, it would probably be more efficient to further widen the scope of certain exceptions to copyright and database rights, such as the exceptions allowing text and data mining.

This leads us to the third crucial question with regard to AI-created works: their legality with regard to copyright law. In short, after discussing the protectability of the output of the machine, the question of the legality of the input necessary for the machine to be able to generate new works needs to be addressed.

5 The Legality of AI-Generated Content Trained on Copyright-Protected Works

AI systems do not produce from scratch. They have to be trained through the process of machine learning with existing data and works.[82] As Martin Senftleben pointedly describes it, "generative AI systems are only capable of mimicking human creativity because human works have been used as training material. On the basis of existing literary and artistic creations that serve as input data, machine-learning algorithms are able to recognize patterns and similarities. Following this deductive method, a generative AI system learns how to produce novel literary and artistic output by imitating the style of human works. The machine-learning algorithm enables the generative AI system to generate literary and artistic content on its own – based on the computational analysis of human works that served as training material".[83] In short, to produce a work "in the style of Picasso", the machine will need to be trained on a high number of existing works by Picasso. The better (and more comprehensive) the training, the better the results obtained.[84] This of course begs the question of how this training can be evaluated from a copyright perspective, in particular when the algorithm is "fed" with copyright protected

[82] On the technical aspects of machine learning *see* Drexl et al. (2019). Exploring the technicalities of machine learning and its implications for ongoing and future litigation, *see also* the very interesting analysis by Guadamuz (2024).

[83] Senftleben (2023). For a comment and review, *see* Geiger (2023c).

[84] Guadamuz (2024): "The more data available the better the models, which translate into more accurate weights, which can then be used to produce better outputs." *See* on this issue in particular also Levendowski (2018), who in this respect emphasizes that "copyright law causes friction that limits access to training data and restricts who can use certain data. This friction is a significant contributor to biased AI" (at p. 589).

works.[85] The answer is not easy, as so far no legislation has been passed to deal exactly with this situation. Therefore, one is left with the general principles of copyright law and with the existing rules that could apply to the situation.

Before examining the European framework, it is worth having a look at how other jurisdictions might handle the tension between copyright and AI learning. In the US, it is generally considered[86] that text and data mining (TDM), which is at the core of the machine learning proc ess, falls under the fair use exception, based on the application by analogy of *Authors Guild v. Google*[87] and *Authors Guild v. HathiTrust.*[88] It has to be mentioned however that these decisions were issued before generative AI systems had bloomed. It cannot be excluded that the wide range of possible applications on a scalable level could lead US judges to a different conclusion when applying the fair-use test under US copyright law. The fourth factor[89] of the fair-use analysis, which focuses on the effects on the market, seems to be the problematic point in the AI context, as direct competition that AI-generated works can have with those created by physical persons may lead to chilling effects on human creativity and creators' earnings.[90] In the case of *Authors Guild v. Google*, the plaintiffs made three arguments why Google´s service should not be considered fair use. First, they contended that Google's service to provide digital copies of entire books, allowing users, through the snippet function, to read parts of the book, provides a substitute for the plaintiffs' work, which would negate the possibility of a fair use finding. Second, the Authors Guild alleged that Google had infringed their derivative rights in search functions, depriving the plaintiffs of revenues or other benefits they would gain from licensed search markets. Third, Google's storage of digital copies exposed the plaintiffs to the risk that hackers would make their books freely (or cheaply) available on the Internet, destroying the value of their copyrights. However, the Court rejected all of these arguments, the main reason why several scholars have argued that the use of copyrighted works to train the AI is *likely* to be considered fair use under US law.[91] Nevertheless, scholars are closely monitoring several lawsuits against AI system producers in the U.S., as rightholders are claiming that these uses are unfair and therefore are not covered by

[85] *See* on the issue Guadamuz (2024); Lucchi (2023).

[86] Samuelson (2021); Lemley and Casey (2021); Carroll (2019); Craig (2022), p. 152.

[87] U.S. Court of Appeals for the Second Circuit, *Authors Guild, Inc. v. Google*, decision of 16 October 2015, No. 804 F.3d 202.

[88] U.S. Court of Appeals for the Second Circuit, *Authors Guild, Inc. v. HathiTrust*, decision of 10 June 2014, No. 755 F.3d 87.

[89] The four factors are listed in Sec. 107 of the 1976 U.S. Copyright Act.

[90] *See* in more detail on the issue of generative AI and fair use in the US: Sag (2023); *see also* the overview from the Congressional Research Service, *see* Zirpoli (2023).

[91] Samuelson (2024); Lemley (2024) (forthcoming); Sag (2019); Sag (2023); Henderson et al. (2023), p. 5; Lemley and Casey (2021); Sobel (2017), p. 96.

the fair use exception of US copyright law.[92] There are initial indications that the rightholder lawsuits will not be successful. For example, a US district court in a recent decision, *Andersen v. Stability AI Ltd,* dismissed most of the claims that images generated by the AI systems based on text prompts violated the plaintiffs' copyrights.[93] The various lawsuits pursued in the US will soon bring first elements about the legality of the use of works for ML purposes. It will be interesting to see if the upcoming US cases will be influenced by the results in the EU or if the US will focus on a completely different approach.

An illustrative instance of a maximalist approach can be seen in the recent legislative proposal unveiled in France on 12 September 2023.[94] This proposal suggests placing the machine learning process under the exclusive control of rightholders whose works are used in the ML process. Furthermore, it advocates for the attribution of authorship of the AI-generated output to all the authors whose works have been used in the machine learning process. Additionally, it mandates labeling the resulting output as "AI-generated work" and listing the names of all the authors whose works were utilized in the training process. Implementing such a measure would necessitate acknowledging a substantial number – potentially thousands or even millions – of authors, given the vast datasets that generative AI commonly trains on. In addition to being impracticable, this all-encompassing solution would likely have very detrimental consequences for the advancement of AI systems. It would surely lead to making any jurisdiction adopting such a solution very unattractive for AI innovators, in particularly start-ups who do not have the capacity to clear all the rights for the works used in the training process.

[92] *See e.g.* in the US: *Doe 1 et al. v. GitHub et al*., Case No. 4:2022cv06823 (N.D. Cal.); *Andersen et al. v. Stability AI et al.*, Case No. 3:23-cv-00201 (N.D. Cal.); *Getty Images v. Stability AI*, Case No. 1:2023cv00135 (D. Del.); *Tremblay P. and Awad M. v. OpenAI INC. et al*., Case No. 3:23-cv-03223 (N.D. Cal.); on this latter class action, *see* Campus (2023), and in UK: *Getty Images v. Stability AI*, Case IL-2023-000007. As of 22 March 2024, there were 20 copyright lawsuits pending in the US against companies developing AI, which cannot all be listed here but can be found at https://chatgptiseatingtheworld.com/2024/03/22/status-of-all-20-copyright-lawsuits-v-ai-mar-22-2024/. More generally on some of these lawsuits *see* Frosio (2024a, b) (forthcoming). *See also* the heavily commented lawsuit filed on 27 December 27 2023 by the New York Times Company against Microsoft and OpenAI before the United States District Court Southern District of New York, Case No. 1:23-cv-11195, arguing that the AI companies' "unlawful use of The Times's work to create artificial intelligence products that compete with it threatens The Times's ability to provide that service. Defendants' generative artificial intelligence ("GenAI") tools rely on large-language models ("LLMs") that were built by copying and using millions of The Times's copyrighted news articles, in-depth investigations, opinion pieces, reviews, how-to guides, and more" […], and seek "to free-ride on The Times's massive investment in its journalism by using it to build substitutive products without permission or payment".

[93] United States District Court of Northern California, Case No. 23-cv-00201-WHO, 30 October 2023, available at https://drive.google.com/file/d/19oLqGeezldu1de366DMGrVYJsKXDgJS2/view. According to US District Court Judge William Orrick, the copyright infringement claims were not sufficiently substantiated: "Finding that the Complaint is defective in numerous respects, I largely GRANT defendants' motions to dismiss and defer the special motion to strike. Plaintiffs are given leave to amend to provide clarity regarding their theories of how each defendant separately violated their copyrights, removed or altered their copyright management information, or violated their rights of publicity, and plausible facts in support".

[94] French National Assembly, Draft Law of the 12 September 2023, No. 1630, available at https://www.assemblee-nationale.fr/dyn/16/textes/l16b1630_proposition-loi.pdf. For a critical analysis *see* Geiger and Iaia (2024).

An AI-guideline proposal by the Japanese government from early June 2023 is heading in the completely opposite direction. The Japanese government released some of the world's first legal guidelines around generative artificial intelligence imagery.[95] Although not implementing a new statutory regulation, the guidelines affirm that machine learning engineers are allowed to use any data they can find, regardless of their copyright protection.[96] Japan had already implemented one of the most liberal laws in 2018, allowing the free use of copyrighted works for training machine learning models as long as the purpose "is not for enjoying or causing another person to enjoy the ideas or emotions expressed in such work."[97] This new guideline is based on a much broader understanding of this law, allowing the use of any data "regardless of whether it is for non-profit or commercial purposes, whether it is an act other than reproduction, or whether it is content obtained from illegal sites or otherwise."[98]

In the European Union, when examining the current legal provisions, since AI systems learn from datasets using the technique of text and data mining (TDM), the most obvious provisions to be scrutinized in this respect are the newly introduced limitations and exceptions for text and data mining-purposes in the Directive of 17 April 2019 on Copyright in the Digital Single Market (CDSM Directive). Article 3 introduces an exception for text and data mining for scientific research which solely benefits research organizations and cultural heritage institutions while Art. 4, introduced later in the elaboration process of the Directive, is not restricted to specific institutions and therefore could be relevant in the context of AI, as these systems are usually operated by private commercial companies not covered by Art. 3. According to Art. 4(1), "Member States shall provide for an exception of limitation […] for reproductions and extractions of lawfully accessible works and other subject matter for the purposes of text and data mining". Interestingly, according to Art. 4(2), "reproductions and extractions made pursuant to paragraph 1 may be retained for as long as is necessary for the purposes of text and data mining", which could be of relevance to solving any possible question of the storage of protected works by the AI in the learning process. However, the usefulness of this provision might be rather limited by the third paragraph of Art. 4, which subjects the application of the exception to the fact that the use of works and other subject matters "has not been expressly reserved by their rightholders in an

[95] *See* the presentation by the Agency for Cultural Affairs (in Japanese), available at https://www.bunka.go.jp/seisaku/chosakuken/pdf/93903601_01.pdf.

[96] "In principle, analysis of information for the purpose of AI development is possible without permission, according to the right limitation provision.", *see* the presentation by the Agency for Cultural Affairs, *supra* note 95 at p. 61 (translated by the author).

[97] Art. 30-4 of the Japanese Copyright Act, translation by Ueno (2021); For a closer look at the TDM exceptions in Japanese copyright law *see also* Dermawan (2023).

[98] *See* statement by the Minister of Education, Culture, Sports, Science and Technology Nagaoka, available at https://go2senkyo.com/seijika/122181/posts/685617; For the broad media response, *see* for example https://technomancers.ai/japan-goes-all-in-copyright-I-apply-to-ai-training/; https://restofworld.org/2023/japans-new-ai-rules-favor-copycats-over-artists/; https://www.reuters.com/technology/japan-leaning-toward-softer-ai-rules-than-eu-source-2023-07-03/; https://www.natlawreview.com/article/japanese-government-identified-issues-related-ai-and-copyrights#:~:text=Do%20Inputs%20to%20AI%20Infringe,not%20unreasonably%20harm%20creators'%20interests.

appropriate manner, such as machine-readable means in the case of content made publicly available online". In short, rightholders can "opt out" of the exception, which potentially can make the provision rather ineffective if a high number of rightholders do so.[99] A lot has been written on the lack of ambition of the provisions on text and data mining, and it is not the place here to discuss them at length.[100] These exceptions have faced strong criticism for taking insufficient account of the importance of text and data mining in many sectors, in particular with regard to the development of AI activities in the EU,[101] while other regions of the world have more flexible approaches in their system of existing limitations.[102]

In any case, what needs to be emphasized here is that the TDM exceptions were not designed to cover machine learning by generative AI systems, meaning AI systems that can produce new works based on the learning from other existing works.[103] This emerges very clearly from the preparatory works of the Directive, where the issue of generative AI and TDM exceptions is absent and has obviously been overlooked. It is thus rather surprising that the Commission considers that the existing legislative framework is perfectly fit for the purpose and that "creation of art works by AI does not deserve a specific legislative intervention", since the TDM exceptions with their possibility of opt-out apply, "providing balance between the

[99] For example, in France, the SACEM (Société des auteurs, compositeurs et éditeurs de musique), the major collective management organization for music, announced that it will exercise the opt-out on behalf of all its 200,000 members, making it probable that other collective management organizations in France and other European countries will follow the same path. *See* "Pour une intelligence artificielle vertueuse, transparente, et équitable: la Sacem exerce son droit d'opt-out", 12 October 2023, available at https://createurs-editeurs.sacem.fr/actualites-agenda/actualites/la-sacem-et-vous/pour-une-intelligence-artificielle-vertueuse-transparente-et-equitable-la-sacem-exerce-son-droit. Since then, the French collecting society SAIF, collective management organization in the field of visual arts and images, has announced it will do the same, https://saif.fr/site/assets/files/120435/saif_droit_dopposition.pdf.

[100] *See* in this regard Geiger et al. (2018a). For a critical evaluation of the Directive proposal, *see also* Geiger et al. (2018b) and from the same authors (2018c); European Copyright Society (2017), p. 5; Hilty and Richter (2023).

[101] *See* Geiger (2021); Geiger et al. (2018d). For a (critical) analysis *see also* Hugenholtz (2019a, b); Geiger et al. (2019); Kop (2021); European Copyright Society (2022); Senftleben (2022); Margoni and Kretschmer (2022); Ducato and Strowel (2019). With a similar conclusion for South America, *see* Jackson Bertón (2021).

[102] *See* Drexl et al. (2019): "The system of copyright exceptions and limitations, as harmonized under the InfoSoc Directive and the Digital Single Market Directive, is not flexible enough to enable the use of IP-protected subject-matter for the purpose of developing AI systems". *See* for example for the US and the potential legality of machine learning under the fair use doctrine, Sag (2019); Carroll (2019); Samuelson (2021); Lemley and Casey (2021) stating however that it is not clear that the use of databases (which include copyrighted works) in machine learning processes that generate new outputs "will be treated as a fair use under current law. Fair use doctrine in the last quarter century has focused on the transformation of the copyrighted work. AIs aren't transforming the databases they train on; they are using the entire database, and for a commercial purpose at that. Courts may view that as a kind of free riding they should prohibit". Thus, even if TDM could qualify as a "fair use" in the past, it remains uncertain if the use of copyrighted works via machine learning in generative AI processes will be allowed under the fair use doctrine (*see also* more detailed on the issue of generative AI and fair use in the US: Sag (2023). For Japan, *see* Ueno (2021). However, the exception introduced in Japanese law in 2019 seems also not to have taken account of generative AI training situations.

[103] *See* in this sense also Nordemann and Pukas (2022): "One thing is certain: there is no provision in the Directive that expressly deals with the training of AI and the copyright-related aspects"; Mezei (2024).

protection of rightholders including artists and the facilitation of TDM, including by AI developers".[104] The AI Act in its latest version adopted by the European Parliament on 13 March 2024 seems to echo that position when imposing obligations on providers of general-purpose AI models to "put in place a policy to comply with Union copyright law, and in particular *to identify and comply with*, including through state-of-the-art technologies, *a reservation of rights expressed pursuant to Article 4(3) of Directive (EU) 2019/790*" (emphasis added).[105] This regulation further introduces transparency obligations for AI developers with regard to the works used in the training process.[106] The vibrant public debate generated by the use of existing works by AI systems for the purpose of generating new ones together with the tremendous economic and societal impacts that these technologies will have on the lives of all citizens seem to indicate that the discussion is not over. In fact, these developments call for another future transparent legislative intervention, as it is hard to imagine that these crucial questions could be settled by legislative provisions that were not designed for this purpose. As we have seen, in various jurisdictions, lawsuits have been introduced to challenge the legality of the use of existing works to train AI systems, and the first decisions are expected soon, which could also affect the future legal framework for generative AI at global level.[107] A certain degree of international harmonization will then be needed in order to avoid AI developers being excessively penalized in the EU context, in particular if the uses of copyrighted works for training purposes should be considered in certain jurisdictions to fall under the fair use provision or other exceptions and limitations to copyright law, thus opening the way for a possible international legal intervention in fora such as WIPO and/or the WTO. In any case, such crucial developments should lead to informed legislative interventions

[104] Answer given on 31 March 2023 by Commissioner Breton on behalf of the European Commission (Parliamentary written question for written answer, E-000479/2023, posed on 15 February 2023 "How does the Commission plan to regulate this use of AI, which harms artists and rights holders?"), available at https://www.europarl.europa.eu/doceo/document/E-9-2023-000479-ASW_EN.html.

[105] European Parliament legislative resolution of 13 March 2024 on the proposal for a regulation of the European Parliament and of the Council on laying down harmonized rules on Artificial Intelligence (Artificial Intelligence Act) and amending certain Union Legislative Acts (COM(2021)0206 – C9-0146/2021 – 2021/0106(COD)), Art. 53, 1 c). *See also* Recital 105, stating that the "Directive (EU) 2019/790 introduced exceptions and limitations allowing reproductions and extractions of works or other subject matter, for the purpose of text and data mining, under certain conditions. Under these rules, rightsholders may choose to reserve their rights over their works or other subject matter to prevent text and data mining, unless this is done for the purposes of scientific research. Where the right to opt out has been expressly reserved in an appropriate manner, providers of general-purpose AI models need to obtain an authorisation from rightsholders if they want to carry out text and data mining over such works". For a comment *see* de Champris (2024).

[106] *See* Art. 53(1)(d) according to which providers of general-purpose AI models shall "draw up and make publicly available a sufficiently detailed summary *about the content used for training of the general-purpose AI model*, according to a template provided by the AI Office" (emphasis added). This resolution follows a provisional agreement reached by the Council presidency and the European Parliament's negotiators on 8 December 2023. On the agreement *see* Keller (2023). For a comment on the copyright aspects envisaged in the AI Act, *see* Quintais (2023).

[107] For an overview over the ongoing cases *see supra* note 92.

following an open, evidence-based transdisciplinary debate on the economic and societal merits of various legal interventions.[108]

Therefore, it is necessary to reflect on possible solutions in this context, as it seems evident that the existing legal framework is not easily adaptable to deal with such an important societal question as the use of existing protected works by AI systems. Fundamental philosophical questions are at stake, in particular what should be the place in the future of creators in a world where works can be created quickly and at rather low costs by AI systems. As the AI is trained with already existing works, how to then incentivize break-through creativity, new trends, new genres, disruptive art that break with the existing?

6 Towards a New Limitation-Based Remuneration Right to the Benefit of Creators for Machine Learning of Generative AI

It is surely not the place here to propose a final "ready-to-go" solution to the issue. A future regulation of AI, as we have already stated above, needs to build on a societal consensus which requires a pluridisciplinary assessment to reach informed consent. Some preliminary thoughts can however already be shared. First, applying Art. 4 of the Directive on copyright and related rights in the Digital Single Market (CDSM) and its "opt out"-mechanism to generative AI is not a satisfying solution if we do not want to inhibit the development of this technology and thus make Europe totally unattractive for AI developers.[109] Not only does the provision involve a lot of uncertainties[110] (when exactly is a content online "lawfully available" to use? How exactly to exercise the opt-out, or, put differently, what is "an appropriate reservation by machine readable means"? And who should be able to decide about this, the author or its derivative rightholder?), it also seems obvious that the opt-out will be used as a new bargaining power to license the use of existing works for training purposes.[111] Given that generative AI systems are trained on an immense number of works if they are to function efficiently, getting all the relevant authorizations would quickly prove to be a licensing nightmare for every AI developer, and in fact strongly privileges the tech giants over any start-up innovators, as only the former will have the means to engage in costly licensing on

[108] Certainly, adding in the last stage of a regulatory process provisions on copyright issues that themselves refer to a legal framework that was not meant to settle these questions, as done recently in the AI Act, is not the right way forward. Indeed, it has to be noted that the proposal for a Regulation introduced by the European Commission on 21 April 2021 did not include any provision on copyright law and that the AI Act was initially not meant to deal with these issues; *See* the Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain, Union Legislative Acts, COM(2021) 206 final.

[109] *See* in this sense also Senftleben (2023).

[110] More detailed in this sense Mezei (2024).

[111] This seems confirmed by Recital 105 of the AI Act in its latest version adopted by the European Parliament on 13 March 2024 (*see supra* note 105).

such large scale.[112] Also, one should be wary of the fact that the author will not necessarily benefit directly from this situation, as it will likely be the big rightholders that will license the uses, with the authors having to (re)negotiate successfully with their producers to get additional remuneration, which is not always an easy task.[113]

Therefore, it might be interesting to reflect on a possible statutory remuneration to the benefit of the author for the use of his works in the context of TDM activities for generative-AI purposes.[114] In previous writings, we had proposed the replacement of the opt-out of Art. 4 CDSM by a statutory remuneration for

[112] *See* in this sense Vesala (2023); Craig (2022), p. 152, emphasizing that "given the sheer volume of text and data mined to effectively train a sophisticated AI, limiting or foreclosing the use of copyright-protected works in such processes in the absence of permission from the right holder places an enormous burden on AI-research and development. Moreover, it produces de facto barriers to certain kind of AI projects, differentially disadvantages anything but the most well-resourced AI researchers and exacerbates the built-in biases and discriminatory effects of AI systems"; Kretschmer et al. (2024) (forthcoming), according to whom "a fully copyright licensed environment of machine learning that may have problematic effects for industry structure, innovation and scientific research; Novelli et al. (2024): "The extensive scale of the datasets used and, consequently, the significant number of right-holders potentially involved render it exceedingly difficult to envision the possibility that those training LLMs could seek (and obtain) an explicit license from all right holders. This issue becomes particularly evident when, as often occurs, LLM training is carried out using web scraping techniques".

[113] For some interesting additional reflections on why authors would lose out in such a scenario, *see* Trendacosta and Doctorow (2023). Proposing however a consensus-based remuneration system in the Asian context, *see* Dermawan and Mezei (2023).

[114] *See* already Geiger (2024); Geiger and Iaia (2024); in the context of the use of journalistic content, *see* Geiger and Jütte (2024) (forthcoming); Frosio (2024a, b) (forthcoming). For a similar proposal in its spirit, *see* Senftleben (2023), p. 14. In his model, the statutory remuneration would however not be on the TDM use of protected works for AI machine learning purposes, but it is "the literary and artistic output of generative AI systems" that serves "as a reference point for a legal obligation to pay remuneration". According to the author, focusing on an "output-oriented AI levy system can be applied in a uniform manner to all providers of generative AI systems in the EU. In contrast to a remuneration obligation focusing on the input dimension and AI training activities, the output-oriented levy approach avoids the risk of disadvantages for EU high-tech industries. All providers of generative AI systems are equally exposed to the levy payment obligation the moment they offer their products and services in the EU". To counter legal/doctrinal concerns and to give theoretical support to the proposal, Senftleben makes useful reference to the theory of the domain public payant. If we agree with the outcome of this innovative proposal, in our view, an input-based remuneration system brings, however, significant advantages. First, it gives legal certainty to AI developers as the training of AI with protected works is still located in the grey zone with regard to its legality, in the EU but also outside, as demonstrated by the numerous lawsuits in the US challenging the legality of the use of copyrighted work to train AI. Ultimately, it is not certain that the courts in the US (where the majority of cases are pending) will consider the machine learning activities as a "fair use". In any case, this will surely be a long judicial battle, involving some uncertainties for the small economic players, before a consistent case law is established under the fair use doctrine. Should, on the contrary, the courts declare the use unfair, this would put the EU developers at a competitive advantage as a remuneration right is always preferable to having to clear all the authorizations. The second argument in favor of a remunerated exception is certainly that it is very much compatible with the European tradition of remunerated exceptions and that there is an established practice and case law with regard to the rules concerning the distribution of these kind of remunerations in favor of creators via collective management organizations. Finally, the idea of the domaine public payant, if admittedly appealing in theory, might not enjoy broad support; at policy level it could be more difficult to achieve consensus on a proposal based on a paid public domain. Advocates of a robust public domain might be favorable towards ameliorating the remuneration situation of creators, less so towards the idea of a domaine public payant.

commercial TDM activities,[115] in order not to penalize start-ups developing useful AI systems in the EU.[116] It needs to be recalled that AI systems cannot function without text and data mining, and therefore if we want to incentivize AI activities in the EU, TDM exceptions are crucial. This certainly does not mean that all the uses should be free in all circumstances, and in the EU there is vast experience with the "permitted-but-paid"[117] model of remunerated limitations and exceptions (or, to use another terminology, "limitation-based remuneration rights").[118]

Thus, by analogy with the idea of a commercial TDM activity, a specific remuneration right to the direct benefit of creators could be elaborated for the use of their work to train machines,[119] possibly subjecting this right to mandatory collective management to make sure it can be rapidly implemented (in the context of the exception for private copy for example, large sums are collected and redistributed by collective management organizations to creators for the use of their works for private purposes, via a relatively well-functioning levy system[120]). In this context, it would also make great sense to differentiate with regard to the purpose of the use and the works used in the machine learning process.[121]

[115] Such as for example TDM brokers, proposing TDM searches on specific subjects for their customers against remuneration. It is likely that these new services will increase in the future, and it could be considered that these commercial TDM activities might be subject to payment of a statutory remuneration.

[116] *See* the proposal in this sense in Geiger et al. (2018b), p. 838.

[117] For this terminology *see* Ginsburg (2014).

[118] *See* Geiger (2010); Geiger and Bulayenko (2022), p. 446; Geiger et al. (2024) (forthcoming).

[119] For such a proposal in the context of machine learning *see* Geiger (2021). *See also* Kop (2021) proposing "the creation of an online one-stop-shop clearinghouse with mandatory or statutory licensing for machine learning training datasets alike a pan-European, multi-territorial collective rights agency". More generally on the advantages of statutory licenses *see* Hilty (2005); Geiger (2010), emphasizing, *inter alia*, that the earnings resulting from these rights can in many cases be much more interesting for authors than the royalty payments they receive from contracting parties resulting from their exclusive entitlements.

[120] Exploring limitation-based remuneration rights and/or mandatory collective management as a compromise solution also in the context of generative AI, *see* Geiger et al. (2024) (forthcoming). According to a study by de Thuiskopie and WIPO (2016), pp. 15–17, approx. EUR 600 million per year was the average amount of private copying levies collected between 2007 and 2015 in 31 countries across the world covered by the survey. These global collections of private copying levies for all rights holders increased, according to a more recent study, and amounted to EUR 1,046 million in 2018 (CISAC et al. (2020), p. 8). They are a particular important revenue source in Europe, where private copying remuneration systems amount to EUR 1019.4 million per year. For the EU *see also* Kretschmer (2011), p. 7: "Following the Directive of 2001, total collection from levies on copying media and equipment in the EU tripled, from about €170m to more than €500m per annum". Admittedly, these remunerations currently benefit both rightholders and authors, but nothing would prevent an increase of the share for creators and even the allocation of the amounts to them exclusively in the future in the context of a limitation-based remuneration for machine learning purposes.

[121] In this spirit, *see* Love (2023): "As laws and regulations emerge, care should be exercised to avoid a one-size-fits-all approach, in which the rules that apply to recorded music or art also carry over to the scientific papers and data used for medical research and development". Research uses benefit from a strong fundamental rights justification and might be treated differently (*see* Geiger and Jütte (2023a)); the statutory remuneration solution for machine learning, however, might avoid many of the blocking issues that could emerge if these uses were submitted to the exclusive right (in the EU, the TDM uses by research organizations are already exempted by Art. 3 TDM). What is evident, however, is that machine learning for research purposes should not be subjected to the exclusive control of publishers. As Love

Of course, the amount of the remuneration to be paid needs to be monitored closely (and preferably independently[122]) in order not to create a significant hurdle for start-ups and AI developers to engage in this activity, and could be adjusted with regard to the economics of this sector and the potential losses which the original creator could incur (intuitively, but this would need to be verified by empirical studies, training AI on highly successful works on the market will create outputs that are likely to be commercially more successful, such as a song in "the style of" a renowned artist). Also, and this should not be forgotten, authors already use (and might increasingly use in the future) AI in their creative process as a tool for creativity, such as digital art using software or even more classically photography using cameras and filters. Opposing AI systems and authors systematically might not be a wise idea as they might very well cohabitate in the future and support each other.[123]

The AI discussion might also be a good opportunity to reflect more generally on a specific remunerated exception for creative reuse that could englobe creative reuses of protected content, since in the digital environment (in particular, but it is also valid in the analog world) creators have increasingly incorporated protected elements in their creative process (sampling being a good example).[124] Of course, there might still be situations where the reuse of the work (by an AI or not) leads to unwanted results. If an AI is trained with protected works to issue outputs that are offensive, explicitly unwanted or carry inappropriate messages (racist, discriminatory, etc.), there should be room for authors to oppose it, but this could be dealt with – as already discussed *supra* – as a moral right issue and not prejudice any practical but fair solution under the economic rights.[125] The situation would not be radically different from a traditional moral rights violation, especially if the original work is recognizable.[126]

Footnote 121 continued
(2023) rightly points out, "it's one thing to have the copyright holder of a popular music recording opt out of a database; it's another if an important scientific paper is left out over licensing disputes".

[122] This could be for example done by a new EU independent copyright institution to be created, *see* in this sense Geiger and Mangal (2022).

[123] *See* in this sense a recent study of the University of Oxford entitled "AI and the Arts: How Machine Learning is Changing Artistic Work", where the scope of human/AI creative complementarity is examined through interview-based case studies of the use of current AI techniques by creators of artistic works. The authors of the study conclude that "despite the increased affordances of machine learning technologies, the relationship between artists and their media remained essentially unchanged, as artists ultimately work to address human—rather than technical— questions" (Ploin et al. (2022)).

[124] *See* for details on this proposal, Geiger (2018); Geiger (2017).

[125] For moral rights issues raised by machine learning processes *see* Drexl et al. (2019), p. 12, stating in particular that "the right to integrity can pose limitations to the training and to the creation of outputs by AI, namely, regarding the processing of protected works".

[126] Freedom of expression is not unlimited, and moral rights can step in when a derivative work is offensive. *See* on this issue, Geiger and Izyumenko (2023).

7 Conclusion and Outlook

As we have seen, the development of AI generates a lot of questions.[127] How profoundly it will affect our lives – and in particularly creativity and the cultural ecosystems – remains to be seen. However, this is not the first – radical – technological (r)evolution that mankind has faced. The legal system, and in particularly the copyright system, (more or less) has always managed to adapt.[128] In any case, as in the past, the underlying human rights framework gives guidance and offers a workable compass in navigating reforms of the current copyright system with regard to generative AI systems.[129] What is certain is that AI invites a much deeper reflection than the question of the copyright issues of AI-generated works; and while lawyers are certainly concerned (as law frames the society we live in), possible future solutions should mostly be taken according to economic, philosophical, technological, artistic and ethical considerations.[130] Certainly, we are only at the beginning of an evolution. For now, as we have seen in this contribution, the copyrightability of AI-generated outputs is to be considered with utmost care[131] and, as follows from a fundamental/human rights perspective, only when AI is used as a technical tool for creators in their creation process – meaning when they can serve a human author. However, we also need to be careful that the development of AI systems is not inhibited, as it can have a multitude of beneficial

[127] *See*, from a US copyright perspective, Lemley (2023). *See also* in this sense the Memorandum Opinion of Judge Howell in the decision of 18 August 2023, in *Thaler v. Perlmuter et al.*, *supra* note 7: "Undoubtedly, we are approaching new frontiers in copyright as artists put AI in their toolbox to be used in the generation of new visual and other artistic works. The increased attenuation of human creativity from the actual generation of the final work will prompt challenging questions regarding how much human input is necessary to qualify the user of an AI system as an "author" of a generated work, the scope of the protection obtained over the resultant image, how to assess the originality of AI-generated works where the systems may have been trained on unknown pre-existing works, how copyright might best be used to incentivize creative works involving AI, and more".

[128] *See* in this sense Crawford and Schultz (2024): "In prior centuries, when new technologies such as the photograph, the sound recording, the computer processor, and the data server emerged, copyright adapted, creating odd and sometimes contorted doctrines to account for the epistemic challenges that each technology posed to the questions What is art? and Who creates it?". However, according to these authors, generative AI is different and will likely lead to a much more profound crisis and destabilization of copyright law.

[129] *See* in this sense but more broadly also the United Nations Human Rights Office of the High Commissioner (2023a), p. 5, according to which "impacts on internationally agreed human rights should be the focus of State and company action to advance the responsible development and deployment of generative AI technologies". *See also* in this sense Rotenberg (2024): "we should consider whether the evolving models for the governance of AI are aligned with the legal norms that undergird democratic societies – fundamental rights, democratic institutions, and the rule of law".

[130] *See* in this sense the interesting reflections by Hasselbalch (2021) proposing that there be found "a common ground for debates on the development and status of big data and AI sociotechnical environments by spelling out a 'human approach'", which the author refers to as a 'data ethics of power'. "A data ethics of power is concerned with making visible the power relations embedded in big data and AI sociotechnical infrastructures in order to point to design, business, policy, social and cultural processes that support a human-centric distribution of power".

[131] *See also* Sun (2022), according to whom "AI works generated solely by autonomous AI systems should be placed in the public domain without copyright protection".

aspects if it is appropriately regulated.[132] Thus, we have proposed the replacement of the opt-out mechanism of Art. 4 CDSM by a TDM exception for creative purposes coupled with a statutory remuneration to the benefit of authors only, in line with a proposal tabled in the past concerning a statutory remuneration for creative uses.[133] As we have tried to demonstrate, this remunerated "right to train the AI" can equally find support in the human rights framework.[134] Of course, this proposal will need to be developed, discussed, closely monitored and evaluated from a multidisciplinary perspective. What is certain is that copyright law should secure a vibrant environment for culture and creativity in the future. This can be done by regulating wisely these new technological environments, but this also requires (finally) cherishing and putting the human author[135] at the center of the copyright system (and not only the copyright industries). Doing this, we might in the future be able to have AI systems that serve creators and creativity, and not the other way around.

Funding Open access funding provided by Luiss University within the CRUI-CARE Agreement.

References

Abbott R (2022) Intellectual property and artificial intelligence, an introduction. In: Abbott RÖ (ed) Research handbook of artificial intelligence and intellectual property. Edward Elgar, Cheltenham, p 18. https://doi.org/10.4337/9781800881907

Abbott R, Rothman E (2023) Disrupting creativity: copyright law in the age of generative artificial intelligence. Fla Law Rev 75(6):1141

[132] In particular Lobel (2023). Regarding the benefits of generative AI in the field of research *see* Flynn et al. (2020); Geiger and Jütte (2023a, b) (Forthcoming); Flynn et al. (2022).

[133] *See* Geiger (2017). More generally on statutory remunerations rights as a workable compromise solution in the digital environment, *see* Geiger and Bulayenko (2022).

[134] Unfortunately, the AI Act in its latest version of March 2024 seems to endorse this "opt-out model", which as we have seen might have detrimental effects on AI developments in the EU but is also unlikely to benefit individual creators directly. As we have seen, other options balancing society's interest in AI development with the interests of creators should be considered. *See also* in this sense the very interesting reflection by Senftleben (2024) (Forthcoming).

[135] *See* in this sense also Gervais (2022), p. 38: "If we refuse to take the position that the focus of IP law is human creativity and innovation, what will be left for us to do? Who will be the great creators of tomorrow who will help us to understand and shape our world if machines are the artists, novelists, and journalists?"

Bensamoun A (2020) Libres propos sur l'existence d'un droit de l'œuvre applicable aux créations issues de l'intelligence artificielle. In: Bruguière J-M, Geiger C (eds) Penser le droit de la pensée Mélanges en l'honneur de Michel Vivant. Dallloz, Paris, p 13

Besamoun A, Farchy J (2020) Mission intelligence artificielle et culture. Conseil Supérieur de la Propriété Littéraire et Artistique. https://www.culture.gouv.fr/content/download/281441/file/CSPLA-Rapport-complet-IA-Culture_janv2020.pdf?inLanguage=fre-FR. Accessed 5 May 2024

Binctin N (2020) L'influence de l'intelligence artificielle sur les mécanismes de la propriété intellectuelle. In: Bruguière J-M, Geiger C (eds) Penser le droit de la pensée. Mélanges en l'honneur de Michel Vivant. Dalloz, Paris, p 41

Blaszczyk M (2023a) Contradictions of computer-generated works' protection. Kluwer Copyright Blog. https://copyrightblog.kluweriplaw.com/2023/11/06/contradictions-of-computer-generated-works-protection/. Accessed 5 May 2024

Blaszczyk M (2023b) impossibility of emergent works' protection in US and EU copyright law. N C J L Tech 25(1):1

Bonadio E, Lucchi N, Mazziotti G (2022) Will technology-aided creativity force us to rethink copyright's fundamentals? Highlights from the platform economy and artificial intelligence. IIC 53:1174. https://doi.org/10.1007/s40319-022-01213-7

Bruguière J-M (2020) Le 'droit d'auteur économique', Un droit d'auteur entrepreneurial perturbateur du droit d'auteur humaniste. In: Bruguière J-M, Geiger C (eds) Penser le droit de la pensée. Mélanges en l'honneur de Michel Vivant. Dallloz, Paris, p 731

Bulayenko O, Quintais JP, Gervais D, Poort J (2022) AI music outputs: challenges to the copyright legal framework. reCreating Europe Report. https://doi.org/10.2139/ssrn.4072806

Burk DL (2023) Cheap creativity and what it will do. GA Law Rev 57:1669. https://doi.org/10.2139/ssrn.4397423

Campus G (2023) Generative AI: the US copyright class action against OpenAI. Kluwer copyright blog. https://copyrightblog.kluweriplaw.com/2023/08/14/generative-ai-the-us-copyright-class-action-against-openai/. Accessed 5 May 2024

Carroll M (2019) Copyright and the progress of science: why text and data mining is lawful. U C Davis Law Rev 53:893

Christoffersen J (2015) Human rights and balancing: the principle of proportionality. In: Geiger C (ed) Research handbook on human rights and intellectual property. Edward Elgar, Cheltenham, p 19

CISAC, BIEM and Stichting de Thuiskopie (2020) Private copying global study. https://www.cisac.org/services/reports-and-research/private-copying-global-study. Accessed 5 May 2024

Committee on Artificial Intelligence (CAI) (2023) Draft framework convention on artificial intelligence, human rights, democracy and the rule of law. https://rm.coe.int/cai-2023-28-draft-framework-convention/1680ade043. Accessed 5 May 2024

Craig C (2022) The AI-copyright challenge: tech neutrality, authorship and the public interest. In: Abbott R (ed) Research handbook of artificial intelligence and intellectual property. Edward Elgar, Cheltenham, p 134. https://doi.org/10.2139/ssrn.4014811

Craig C, Kerr I (2020) The death of the AI Author. Ott Law Rev 52(1):31. https://doi.org/10.2139/ssrn.3374951

De Champris B (2024) Artificial intelligence and copyright: the EU should preserve the Copyright Directive's delicate balance to safeguard and promote innovation. AIRe 2024(1):113

De Gregorio G (2022) Digital constitutionalism in Europe, reframing rights and powers in the algorithmic society. Cambridge University Press, Cambridge. https://doi.org/10.1017/9781009071215.002

Dermawan A (2023) Text and data mining exceptions in the development of generative AI models: what the EU member states could learn from the Japanese "non enjoyment" purposes? J World Intellect Prop 27(1):1. https://doi.org/10.1111/jwip.12285. Accessed 5 May 2024

Dermawan A, Mezei P (2023) Artificial intelligence and consensus-based remuneration regime in Southeast Asia. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4625850

Drexl J (2007) Constitutional protection of authors' moral rights in the European Union—between privacy, property and the regulation of the economy. In: Ziegler KS (ed) Human rights and private law: privacy as autonomy. Hart Publishing, Oxford, p 159. https://doi.org/10.5040/9781472563934.ch-013. Accessed 5 May 2024

Drexl J, Hilty RM et al (2019) Technical aspects of artificial intelligence: an understanding from an intellectual property law perspective. Max Planck Institute for Innovation and Competition Research Paper No. 19-13 https://ssrn.com/abstract=3465577

Drexl J, Hilty RM et al (2021) Artificial intelligence and intellectual property law, position statement of the Max Planck Institute for Innovation and Competition of 9 April 2021 on the Current Debate. Max Planck Institute for Innovation and Competition Research Paper No. 21-10. https://ssrn.com/abstract=3822924

Dreyfuss RC (2023) Human rights in a technological age: the right to participate in science. NYU J Int Law Politics 55:581. https://doi.org/10.2139/ssrn.4360115

Dreyfuss RC, Zimmerman DL, First H (eds) (2001) Expanding the boundaries of intellectual property. Oxford University Press, Oxford. https://doi.org/10.1093/oso/9780198298571.001.0001

Ducato R, Strowel A (2019) Limitations to text and data mining and consumer empowerment: making the case for a right to 'machine legibility.' IIC 50(6):649. https://doi.org/10.1007/s40319-019-00833-w

Duque Lizarralde M, Meinecke C (2023) Authorless AI-assisted productions: recent developments impacting their protection in the European Union. JIPITEC 14(1):93

Dusollier S (2020) Du commun de l'intelligence artificielle. In: Bruguière J-M, Geiger C (eds) Penser le droit de la pensée. Mélanges en l'honneur de Michel Vivant. Dallloz, Paris, p 600

European Commission (2022) Study on copyright and new technologies: copyright data management and artificial intelligence. https://op.europa.eu/en/publication-detail/-/publication/cc293085-a4da-11ec-83e1-01aa75ed71a1/language-en. Accessed 5 May 2024

European Commission, Directorate General for Communication Networks, Content and technology (2022) Study on copyright and new technologies: copyright data management and artificial intelligence. Publications Office of the European Union. https://doi.org/10.2759/570559

European Copyright Society (2017) General opinion on the EU copyright reform package. https://europeancopyrightsociety.org/wp-content/uploads/2015/12/ecs-opinion-on-eu-copyright-reform-def.pdf. Accessed 5 May 2024

European Copyright Society (2022) Comment of the European Copyright Society addressing selected aspects of the implementation of articles 3 to 7 of Directive (EU) 2019/790 on Copyright in the Digital Single Market. https://europeancopyrightsocietydotorg.files.wordpress.com/2022/05/ecs_exceptions_final-3.pdf. Accessed 5 May 2024

Fenwick M, Jurcys P (2023) Originality and the future of copyright in an age of generative AI. Comput Law Secur Rev Int J Technol Law Pract. https://doi.org/10.1016/j.clsr.2023.105892

Fischman Afori O (2014) Proportionality—a new mega standard in European copyright law. IIC 45:889

Flynn S, Geiger C, Quintais JP (2020) Implementing user rights for research in the field of artificial intelligence: a call for international action. EIPR 42(7):393

Flynn S et al (2022) Legal reform to enhance global text and data mining research. Science 378(6623):951. https://doi.org/10.1126/science.add6124

Frosio G (2022) Four theories in search of an A(I)uthor. In: Abbott R (ed) Research handbook of artificial intelligence and intellectual property. Edward Elgar, Cheltenham, p 156. https://doi.org/10.2139/ssrn.4004138

Frosio G (2024a) Generative AI in court. In: Koutras N, Selvadurai N (eds) Recreating creativity, reinventing inventiveness—international perspectives on AI and IP governance. Routledge, London. https://doi.org/10.4324/9781003260127-2 (Forthcoming)

Frosio G (2024b) Should we ban generative AI, incentivise it or make it a medium for inclusive creativity. In: Bonadio E, Sganga C (eds) A research agenda for EU copyright law. Edward Elgar, Cheltenham. https://doi.org/10.2139/ssrn.4527461 (Forthcoming)

Gaudrat P, Vivant M (2004) Marchandisation. In: Vivant M (ed) Propriété Intellectuelle et mondialisation, La propriété intellectuelle est-elle une marchandise? Dalloz, Paris p 41

Geiger C (2004) Droit d'auteur et droit du public à l'information: approche de droit compare. Litec, Paris

Geiger C (2006) Constitutionalizing' intellectual property law? The influence of fundamental rights on intellectual property in Europe. IIC 37(4):371

Geiger C (2009) Intellectual property shall be protected!? Article 17(2) of the Charter of Fundamental Rights of the European Union: a mysterious provision with an unclear scope. EIPR: 113

Geiger C (2010) Promoting creativity through copyright limitations, reflections on the concept of exclusivity in copyright law. Vanderbilt J Entertain Technol Law 12(3):515

Geiger C (2012) Fundamental rights as common principles of European (and international) intellectual property law. In: Ohly A (ed) Common principles of European intellectual property law. Mohr Siebeck, Tubinga, p 223

Geiger C (2013) The social function of intellectual property rights, or how ethics can influence the shape and use of IP law. In: Dinwoodie GB (ed) Intellectual property law: methods and perspectives. Edward Elgar, Cheltenham, p 153. https://doi.org/10.4337/9781783470532.00013

Geiger C (2015) Implementing intellectual property provisions in human rights instruments: towards a new social contract for the protection of intangibles. In: Geiger C (ed) Research handbook on human rights and intellectual property. Edward Elgar, Cheltenham, p 661. https://doi.org/10.4337/9781783472420.00051

Geiger C (2016a) Copyright as an access right, securing cultural participation through the protection of creators' interests. In: Giblin R, Weatherall KG (eds) What if we could reimagine copyright? Australian National University (ANU) Press, Canberra, p 73. https://doi.org/10.22459/wiwcrc.01.2017.03

Geiger C (2016b) Taking the right to culture seriously: time to rethink copyright law. In: Geiger C (ed) Intellectual property and access to science and culture: convergence or conflict. CEIPI/ICTSD publication series on "Global Perspectives and Challenges for the Intellectual Property System" 3:84 https://www.ceipi.edu/websites/ceipi/Documents/Publications_CEIPI___ICTSD/CEIPI-ICTSD_no_3.pdf. Accessed 5 May 2024

Geiger C (2017) Statutory licenses as enabler of creative uses. In: Liu K-C, Hilty RM (eds) Remuneration of copyright owners, regulatory challenges of new business models. Springer, Berlin, p 305. https://doi.org/10.1007/978-3-662-53809-8_18

Geiger C (2018) Freedom of artistic creativity and copyright law: a compatible combination? UC Irvine Law Rev 8(3):413

Geiger C (2019) Les inventions mises en œuvre par ordinateur: actualité et enjeux de l'extension contemporaine de la brevetabilité. In: Dhenne M, Geiger C (eds) Les inventions mises en œuvre par ordinateur: enjeux, pratiques et perspectives. LexisNexis, New York, p 1. https://doi.org/10.2139/ssrn.3339312

Geiger C (2020a) Reconceptualizing the constitutional dimension of intellectual property—an update. In: Torremans P (ed) Intellectual property and human rights, 4th edn. Kluwer Law International, Cambridge, p 117. https://doi.org/10.2139/ssrn.3496779

Geiger C (2020b) Regulatory and policy issues arising from intellectual property and investor-state dispute settlement in the EU: a closer look at the TTIP and CETA. In: Geiger C (ed) Research handbook on intellectual property and investment law. Edward Elgar, Cheltenham, p 505. https://doi.org/10.4337/9781788977821.00037

Geiger C (2021) The missing goal-scorers in the artificial intelligence team: of big data, the fundamental right to research and the failed text and data mining limitations in the CSDM Directive. In: Senftleben M, Poort J, van Eechoud M, van Gompel S, Helberger N (eds) Intellectual property and sports, essays in honour of P. Bernt Hugenholtz. Kluwer Law International, Alphen aan den Rijn, p 383. https://doi.org/10.2139/ssrn.3829768

Geiger C (2022a) Building an ethical framework for intellectual property in the EU: time to revise the Charter of Fundamental Rights. In: Ghidini G, Falce V (eds) Reforming intellectual property law. Edward Elgar, Cheltenham, p 90. https://doi.org/10.2139/ssrn.3938873

Geiger C (2022b) Intellectual property and investment protection: a misleading equation. In: Fischer V, Nolte G, Senftleben M, Specht-Riemenschneider L (eds) Gestaltung der Informationsrechtsordnung—Festschrift für Thomas Dreier zum 65. Geburtstag. C.H. Beck, pp 7. https://doi.org/10.2139/ssrn.3958320

Geiger C (2022c) The role of human creativity in the copyrightability of artificial intelligence-generated works. JOTWELL https://ip.jotwell.com/the-role-of-human-creativity-in-the-copyrightability-of-artificial-intelligence-generated-works/. Accessed 5 May 2024

Geiger C (2023a) Excluding intellectual property from bilateral trade and investment agreements: a lesson from the global health crisis. In: Frankel S, Chon M, Dinwoodie G, Schovsbo J, Lauriat B (eds) Improving intellectual property: a global project. Edward Elgar, Cheltenham, p 426. https://doi.org/10.4337/9781035310869.00059

Geiger C (2023b) The constitutionalization of IP law as a guaranty for competing freedoms: is the glass half empty or half full? Paper presented at the conference "Conflicting Freedoms in Intellectual Property Law" organized by the EBS Law School of the University of Wiesbaden (Germany), 27 October 2023 (on file with author)

Geiger C (2023c) To pay or not to pay (for training generative ai), that is the question. JOTWELL https://ip.jotwell.com/to-pay-or-not-to-pay-for-training-generative-ai-that-is-the-question/. Accessed 5 May 2024

Geiger C (2024) When the robots (try to) take over: of artificial intelligence, authors, creativity and copyright protection. In: Thouvenin F, Peukert A, Jäger T, Geiger C (eds) Innovation—creation—

markets, Festschrift Reto M. Hilty. Springer, Berlin, p 67. https://doi.org/10.1007/978-3-662-68599-0_6
Geiger C, Bulayenko O (2022) Creating statutory remuneration rights in copyright law: what policy options under the international framework? In: Grosse Ruse-Khan H, Metzger A (eds) Intellectual property ordering beyond borders. Cambridge University Press, Cambridge, p 408. https://doi.org/10.2139/ssrn.3722108
Geiger C, Iaia V (2023) Generative AI, digital constitutionalism and copyright: towards a statutory remuneration right grounded in fundamental rights. The Digital Constitutionalist. https://digi-con.org/generative-ai-digital-constitutionalism-and-copyright-towards-a-statutory-remuneration-right-grounded-in-fundamental-rights/. Accessed 5 May 2024
Geiger C, Iaia V (2024) The forgotten creator: towards a statutory remuneration right for machine learning of generative AI. Comput Law Secur Rev 52:105925 (Forthcoming)
Geiger C, Izyumenko E (2014) Copyright on the human rights trial: redefining the boundaries of exclusivity through freedom of expression. IIC 45:316. https://doi.org/10.2139/ssrn.3009161
Geiger C, Izyumenko E (2018) Intellectual Property before the European Court of Human Rights. In: Geiger C, Nard CA, Seuba X (eds) Intellectual property and the judiciary. Edward Elgar, Cheltenham, p 9. https://doi.org/10.4337/9781788113083.00009
Geiger C, Izyumenko E (2019) Towards a European 'fair use' grounded in freedom of expression. Am Univ Int Law Rev 35(1):58. https://doi.org/10.2139/ssrn.3379531
Geiger C, Izyumenko E (2020) Shaping intellectual property rights through human rights adjudication: the example of the European Court of Human Rights. Mitchell Hamline Law Rev 46:527
Geiger C, Izyumenko E (2020) The constitutionalization of intellectual property law in the EU and the Funke Medien, Pelham and Spiegel Online decisions of the CJEU: progress, but still some way to go! IIC 51(3):282. https://doi.org/10.2139/ssrn.3472852
Geiger C, Izyumenko E (2023) Designing a freedom of expression-compliant framework for moral rights in the eu: challenges and proposals. In: Gendreau Y (ed) Research handbook on intellectual property and moral rights. Edward Elgar, Cheltenham, p 292
Geiger C, Jütte BJ (2022) Digital constitutionalism and copyright reform: securing access to through fundamental rights in the online world. The Digital Constitutionalist https://digi-con.org/digital-constitutionalism-and-copyright-reform-securing-access-through-fundamental-rights-in-the-online-world/. Accessed 5 May 2024
Geiger C, Jütte BJ (2023a) Conceptualizing a 'right to research' and its implications for copyright law, an international and European perspective. Am Univ Int Law Rev 38(1):1
Geiger C, Jütte BJ (2023b) The right to research as guarantor for sustainability, innovation and justice in EU copyright law. In: Pihlajarinne T, Mähönen J, Upreti P (eds) Rethinking the role of intellectual property rights in the post pandemic world: an integrated framework of sustainability, innovation and global justice. Edward Elgar, Cheltenham, p 138.
Geiger C, Jütte BJ (2024) Designing digital constitutionalism: copyright exceptions and limitations as a regulatory framework for media freedom and the right to information online. In: Senftleben M et al (eds) Cambridge handbook of media law and policy in Europe. Cambridge University Press, Cambridge. https://doi.org/10.2139/ssrn.4548510 (Forthcoming)
Geiger C, Mangal N (2022) Regulating creativity online: proposal for an EU copyright institution. GRUR Int 71(10):933. https://doi.org/10.2139/ssrn.4107644
Geiger C, Frosio G, Bulayenko O (2018a) The exception for text and data mining (TDM) in the Proposed Directive on Copyright in the Digital Single Market—legal aspects. Study for the Directorate-General for Internal Policies of the Union, Department of Citizens' Rights and Constitutional Affairs, European Parliament. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3160586. Accessed 5 May 2024
Geiger C, Frosio G, Bulayenko O (2018b) Text and data mining in the proposed copyright reform: making the EU ready for an age of big data? IIC 49(7):814. https://doi.org/10.1007/s40319-018-0722-2
Geiger C, Frosio G, Bulayenko O (2018c) The EU Commission's proposal to reform copyright limitations: a good but far too timid step in the right direction. EIPR 40(1):4
Geiger C, Frosio G, Bulayenko O (2018d) Crafting a text and data mining exception for machine learning and big data in the digital single market. In: Seuba X, Geiger C, Pénin J (eds) Intellectual property and digital trade in the age of artificial intelligence and big data. ICTSD, Geneva/ Strasbourg, p 95

Geiger C, Frosio G, Bulayenko O (2019) Text and data mining: articles 3 and 4 of the Directive 2019/790/EU. In: Saiz Garcia C, Evangelio Llorca R (eds) Propiedad intelectual y mercado único digital europeo. Tirant lo Blanch, Valencia, p 27. https://doi.org/10.2139/ssrn.3470653

Geiger C, Schönherr F, Jütte BJ (2024) Limitation-based remuneration rights as a compromise between access and remuneration interests in copyright law: what role for collective rights management? In: Gervais D, Quintais JP (eds) Collective management of copyright and related rights, 4th edn. Kluwer Law International, Cambridge. https://doi.org/10.2139/ssrn.4714080 (Forthcoming)

Gervais D (2015) Human rights and the philosophical foundations of intellectual property. In: Geiger C (ed) Research handbook on human rights and intellectual property. Edward Elgar, Cheltenham, p 89. https://doi.org/10.4337/9781783472420.00014

Gervais D (2020) The machine as author. Iowa Law Rev 105:2053

Gervais D (2022) The human cause. In: Abbott R (ed) Research handbook of artificial intelligence and intellectual property. Edward Elgar, Cheltenham, p 22. https://doi.org/10.4337/9781800881907.00007

Gervassis N, Trapova A (2022) UKIPO's public consultation on AI and IP—computer-generated works (1st part). http://copyrightblog.kluweriplaw.com/2022/03/14/ukipos-public-consultation-on-ai-and-ip-computer-generated-works-part-1/

Ginsburg JC (2014) Fair use for free, or permitted-but-paid? Berkeley Technol Law J 29(3):1446. https://doi.org/10.2139/ssrn.3484949

Ginsburg JC (2018) People not machines: authorship and what it means in the Berne convention. IIC 49:131. https://doi.org/10.1007/s40319-018-0670-x

Ginsburg JC, Budiardjo LA (2019) Authors and machines. Berkeley Technol Law J 34(2):343. https://doi.org/10.2139/ssrn.3233885

Griffiths J (2013) Constitutionalising or Harmonising? The Court of Justice, the Right to Property and European Copyright Law. Eur Law Rev 38:65

Griffiths J (2018) Taking power tools to the acquis—the Court of Justice, the Charter of Fundamental Rights and European Union copyright law. In: Geiger C, Nard CA, Seuba X (eds) Intellectual property and the judiciary. Edward Elgar, Cheltenham, p 144. https://doi.org/10.4337/9781788113083.00013

Griffiths J, McDonagh L (2013) Fundamental rights and European intellectual property law—the case of art 17(2) of the EU Charter. In: Geiger C (ed) Constructing European intellectual property: achievements and new perspectives. EIPIN Series, vol 1. Edward Elgar, Cheltenham, p 75. https://doi.org/10.4337/9781781001639.00014

Guadamuz A (2021) Do androids dream of electric copyright? Comparative analysis of originality in artificial intelligence generated works. In: Hilty RM, Lee J-A, Liu K-C (eds) Artificial intelligence and intellectual property. Oxford University Press, Oxford, p 147. https://doi.org/10.1093/oso/9780198870944.003.0008

Guadamuz A (2024) A scanner darkly: copyright liability and exceptions in artificial intelligence inputs and outputs. GRUR Int 73(2):111–127, https://doi.org/10.1093/grurint/ikad140/7529098.

Hasselbalch G (2021) Data ethics of power, a human approach in the big data and AI era. Edward Elgar, Cheltenham. https://doi.org/10.4337/9781802203110

Henderson P et al (2023) Foundation models and fair use. https://arxiv.org/abs/2303.15715

Hilty RM (2005) Verbotsrecht vs. Vergütungsanspruch: Suche nach Konsequenzen der tripolaren Interessenlage im Urheberrecht. In: Ohly A, Lehmann M, Bodewig T, Dreier T (eds) Perspektiven des Geistigen Eigentums und Wettbewerbsrechts. Festschrift für Gerhard Schricker zum 70. Geburtstag. C.H. Beck, pp 325

Hilty RM (2007) The expansion of copyright law and its social justification. In: Heath C, Liu K-C (eds) Copyright law and the information society in Asia. Hart Publishing, Oxford, p 1. https://doi.org/10.5040/9781472563835.ch-001

Hilty RM, Geiger C (2005) Patenting software? A judicial and socio-economic analysis. IIC 36(6):615

Hilty RM, Richter H (2023) Text and data mining. In: Hilty RM, Moscon V (eds) Modernisation of the EU copyright rules, position statement MPI for innovation and competition. Research Paper No. 17-12, pp 25. https://doi.org/10.2139/ssrn.2900110

Hilty RM, Hoffmann J, Scheuerer S (2021) Intellectual property justification for artificial intelligence. In: Hilty RM, Lee J-A, Liu K-C (eds) Artificial intelligence and intellectual property. Oxford University Press, Oxford, p 50. https://doi.org/10.1093/oso/9780198870944.003.0004

Hugenholtz PB (2001) Copyright and freedom of expression in Europe. In: Cooper Dreyfuss R, Leenheer Zimmerman D, First H (eds) Expanding the boundaries of intellectual property. Innovation Policy

for the Knowledge Society. Oxford University Press, Oxford, p 343. https://doi.org/10.1093/oso/9780198298571.003.0014
Hugenholtz PB (2019a) Neighboring rights are obsolete. IIC 50:1006. https://doi.org/10.1007/s40319-019-00864-3
Hugenholtz PB (2019b) The new copyright directive: text and data mining (articles 3 and 4). Kluwer Copyright Blog. http://copyrightblog.kluweriplaw.com/2019/07/24/the-new-copyright-directive-text-and-data-mining-articles-3-and-4/. Accessed 5 May 2024
Hugenholtz PB, Quintais JP (2021) Copyright and artificial creation: does EU copyright law protect AI-assisted output? IIC 52:1190. https://doi.org/10.1007/s40319-021-01115-0
Hugenholtz PB et al (2020) Trends and developments in artificial intelligence—challenges to the intellectual property rights framework—Final report. Publications Office of the European Union https://doi.org/10.2759/683128
Hughes P (2018) Painting on a broader canvas: the need for a wider consideration of moral rights under EU law. EIPR 40(2):95
Husovec M (2020) The fundamental right to property and the protection of investment: how difficult is it to repeal new intellectual property rights? In: Geiger C (ed) Research handbook of intellectual property and investment law. Edward Elgar, Cheltenham, p 385. https://doi.org/10.4337/9781788977821.00030
Iaia V (2022) To be, or not to be … original under copyright law, that is (one of) the main questions concerning AI-produced works. GRUR Int 71(9):793. https://doi.org/10.1093/grurint/ikac087
Ishiguro K (2021) Klara and the sun. Faber and Faber, London
Jackson Bertón M (2021) Text and data mining exception in South America: a way to foster AI development in the region. GRUR Int 70(12):1145. https://doi.org/10.1093/grurint/ikab081
Judge EF, Korharni AM (2021) Deepfakes, counterfeits, and personality. Ottawa Faculty of Law Working Paper No. 2021-21 https://ssrn.com/abstract=3893890. Accessed 5 May 2024
Keller P (2022) Copyright rules for AI-generated visuals will determine the future of synthetic worlds. https://openfuture.eu/blog/copyright-rules-for-ai-generated-visuals-will-determine-the-future-of-synthetic-worlds/. Accessed 5 May 2024
Keller P (2023) A first look at the copyright relevant parts in the final AI Act compromise. Kluwer Copyright Blog. https://copyrightblog.kluweriplaw.com/2023/12/11/a-first-look-at-the-copyright-relevant-parts-in-the-final-ai-act-compromise/. Accessed 5 May 2024
Kop M (2021) The right to process data for machine learning purposes in the EU. Harv J Law Technol 34(1):7
Kretschmer M (2011) Private copying and fair compensation: an empirical study of copyright levies in Europe. UK Intellectual Property Office, London
Kretschmer M, Margoni T, Oruc P (2024) Copyright law, and the lifecycle of machine learning models. IIC 55:110. https://doi.org/10.1007/s40319-023-01419-3
Laser C (2023) How a century-old insight of photography can inform legal questions of AI-generated artwork. Technology & Marketing Law Blog. https://ssrn.com/abstract=4529595. Accessed 5 May 2024
Lee E (2023) Comment of professor Edward Lee to artificial intelligence study by the United States Copyright Office. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4619118. Accessed 5 May 2024
Lee E (2024) Prompting progress: authorship in the age of AI. Fla Law Rev 76. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4609687 (Forthcoming)
Lemley MA (2023) How generative AI Turns copyright law on its head. https://ssrn.com/abstract=4517702. Accessed 5 May 2024
Lemley MA (2024) How generative AI turns copyright law on its head. Colum Sci Tech Law Rev (Forthcoming)
Lemley MA, Casey B (2021) Fair learning. Tex Law Rev 99(4):743
Levendowski A (2018) How copyright law can fix artificial intelligence's implicit bias problem. Wash Law Rev 93:579
Lobel O (2023) The law of AI for good. San Diego Legal Studies Paper No. 23-001 https://ssrn.com/abstract=4338862. Accessed 5 May 2024
Lorenz P, Perset K, Berryhill J (2023) Initial policy considerations for generative artificial intelligence. OECD Artificial Intelligence Papers 1. https://doi.org/10.1787/fae2d1e6-en

Love J (2023) We need smart intellectual property laws for artificial intelligence. Scientific American https://www.scientificamerican.com/article/we-need-smart-intellectual-property-laws-for-artificial-intelligence/. Accessed 5 May 2024

Lucchi N (2023) ChatGPT: a case study on copyright challenges for generative artificial intelligence systems. Eur J Risk Regul. https://doi.org/10.1017/err.2023.59

Margoni T, Kretschmer M (2022) A deeper look into the EU text and data mining exceptions: harmonisation, data ownership, and the future of technology. GRUR Int. 71(8):685. https://doi.org/10.2139/ssrn.3886695

Mezei P (2024) A saviour or a dead end? Reservation of rights in the age of generative AI. EIPR (Forthcoming). https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4695119. Accessed 5 May 2024

Militsyna K (2023) Human creative contribution to AI-based output—one just can('t) get enough. GRUR Int 72(10):939. https://doi.org/10.1093/grurint/ikad075

Mylly T (2005) Intellectual property and fundamental rights. In: Bruun N (ed) Intellectual property beyond rights. WSOY, Helsinki, p 187

Mylly T (2015) The Constitutionalization of the European legal order: impact of human rights on intellectual property in the EU. In: Geiger C (ed) Research handbook on human rights and intellectual property. Edward Elgar, Cheltenham, p 103. https://doi.org/10.4337/9781783472420.00017

Mylly T (2018) Of values and legitimacy—discourse analytical insights on the copyright case law of the Court of Justice of the European Union. Mod Law Rev 81(2):282

Mylly T (2020) Proportionality in the CJEU's internet copyright case law: invasive or resilient? In: Bernitz U, Groussot X, Paju J, de Vries SA (eds) General principles of EU law and the EU digital order. Kluwer Law International, Alphen aan den Rijn, p 257

Nordemann J, Pukas J (2022) Copyright exceptions for AI training data—will there be an international level playing field? J Intellect Prop Law Pract 17(12):974. https://doi.org/10.1093/jiplp/jpac106

Novelli C, Casolari F, Hacker P, Spedicato G, Floridi L (2024) Generative AI in EU law: liability, privacy, intellectual property, and cybersecurity. pp 18 https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4694565. Accessed 5 May 2024

Papadopoulou A (2021) Creativity in crisis: are the creations of artificial intelligence worth protecting? JIPITEC 12:408

Ploin A, Eynon R, Hjorth I, Osborne MA (2022) AI and the Arts: how machine learning is changing artistic work. Report from the Creative Algorithmic Intelligence Research Project, Oxford Internet Institute, University of Oxford. https://www.oii.ox.ac.uk/wp-content/uploads/2022/03/040222-AI-and-the-Arts_FINAL.pdf. Accessed 5 May 2024

Pollicino O (2021) Judicial protection of fundamental rights on the internet, a road towards digital constitutionalism? Bloomsbury (London). https://doi.org/10.5040/9781509912728

Quintais JP (2023) Generative AI, copyright and the AI Act. https://copyrightblog.kluweriplaw.com/2023/05/09/generative-ai-copyright-and-the-ai-act/. Accessed 5 May 2024

Quintavalla A, Temperman J (2023) Artificial intelligence and human rights. Oxford University Press, Oxford

Ramalho A (2017) Will robots rule the (artistic) world? A proposed model for the legal status of creations by artificial intelligence systems. J Internet Law 21(1):12. https://doi.org/10.2139/ssrn.2987757

Rotenberg M (2024) Human rights alignment: the challenge ahead for AI lawmakers. In: Werthner H, Ghezzi C, Kramer J, Nida-Rümelin J, Nuseibeh B, Prem E, Stanger A (eds) Introduction to digital humanism, a textbook. Springer, Berlin, p 611. https://doi.org/10.1007/978-3-031-45304-5_38

SACEM (2023) Pour une intelligence artificielle vertueuse, transparente, et équitable: la Sacem exerce son droit d'opt-out. https://createurs-editeurs.sacem.fr/actualites-agenda/actualites/la-sacem-et-vous/pour-une-intelligence-artificielle-vertueuse-transparente-et-equitable-la-sacem-exerce-son-droit. Accessed 5 May 2024

Sag M (2019) The new legal landscape for text mining and machine learning. J Copyr Soc USA 66:291. https://doi.org/10.2139/ssrn.3331606

Sag M (2023) Copyright safety for generative AI. Houst Law Rev 62(2):295. https://doi.org/10.2139/ssrn.4438593

Saiz García C (2019) Las obras creadas por sistemas de inteligencia artificial y su protección por el Derecho de autor. InDret 1. https://indret.com/las-obras-creadas-por-sistemas-de-inteligencia-artificial-y-su-proteccion-por-el-derecho-de-autor/. Accessed 5 May 2024

Samtani S (2023) Developing a human right to research in international law. PIJIP/TLS Research Paper Series No. 107 https://digitalcommons.wcl.american.edu/research/107. Accessed 5 May 2024
Samuelson P (1986) Allocating ownership rights in computer-generated works. Univ Pittsburgh Law Rev 47(4):1186
Samuelson P (2021) Text and data mining of in-copyright works: is it legal? Commun ACM 41(1):20. https://doi.org/10.1145/3486628
Samuelson P (2024) Fair use defenses in disruptive technology cases. UCLA Law Rev 71 (Forthcoming)
Samuelson P, Springman CJ, Sag M (2023) Comments in response to the Copyright Office's notice of inquiry on artificial intelligence and copyright. p 2. https://www.regulations.gov/comment/COLC-2023-0006-8854. Accessed 5 May 2024
Schovsbo J (2015) Constitutional foundations and constitutionalization of IP law—a tale of different stories? Zeitschrift für Geistiges Eigentum/Intellect Prop J 7(4):383. https://doi.org/10.1628/186723716x14532999424179
Senftleben M (2022) Compliance of national TDM rules with international copyright law—an overrated nonissue? IIC 53(10):1477. https://doi.org/10.2139/ssrn.4134651
Senftleben M (2023) Generative AI and author remuneration. IIC 54:1535. https://doi.org/10.1007/s40319-023-01399-4
Senftleben M (2024) AI Act and author remuneration—a model for other regions? https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4740268 (Forthcoming)
Senftleben M, Buijtelaar L (2020) Robot creativity: an incentive-based neighboring rights approach. EIPR 42:797. https://doi.org/10.2139/ssrn.3707741
Sganga C (2021) The many metamorphoses of related rights in EU copyright law: unintended consequences or inevitable developments? GRUR Int. 70(9):821. https://doi.org/10.1093/grurint/ikab071
Shaheed F (2014) Copyright policy and the right to science and culture. Human rights council, twenty-eighth session, A/HRC/28/57. https://digitallibrary.un.org/record/792652?ln=en. Accessed 5 May 2024
Shtefan A (2023) Creations of artificial intelligence, in search of the legal protection regime. JIPITEC 14(1):94
Sobel BLW (2017) Artificial intelligence's fair use crisis. Colum J Law Arts 41:45
Sun H (2022) Redesigning copyright protection in the era of artificial intelligence. Iowa Law Rev 107:1217
Sunstein CR (2023) Artificial intelligence and the first amendment. https://ssrn.com/abstract=4431251. Accessed 5 May 2024
Thuiskopie and WIPO (2016) International survey on private copying. https://doi.org/10.34667/tind.28987
Trapova A, Mezei P (2022) Robojournalism—a copyright study on the use of artificial intelligence in the European news industry. GRUR Int 71(7):589. https://doi.org/10.1093/grurint/ikac038
Trendacosta K, Doctorow C (2023) AI art generators and the online image market. https://www.eff.org/deeplinks/2023/04/ai-art-generators-and-online-image-market. Accessed 5 May 2024
Tyagi K (2023) Deepfakes, copyright and personality rights an inter-disciplinary perspective. In: Mathis K, Tor A (eds) Law and economics of the digital transformation. Springer, Berlin, p 191. https://doi.org/10.1007/978-3-031-25059-0_9
UN Committee on Economic, Social and Cultural Rights (CESCR) (2006) General Comment No. 17, "The right of everyone to benefit from the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he or she is the author, art. 15, para. 1(c) of the covenant". E/C.12/GC/17 http://www.refworld.org/docid/441543594.html. Accessed 5 May 2024
U.S. Copyright Office Guidelines (2021) Compendium of U.S. Copyright Office practices, 3rd edn. https://www.copyright.gov/comp3/docs/compendium.pdf. Accessed 5 May 2024
Ueno T (2021) The flexible copyright exception for 'non-enjoyment' purposes—recent amendment in Japan and its implication. GRUR Int 70(2):145. https://doi.org/10.1093/grurint/ikaa184
UNESCO (2021) Recommendation on the ethics of artificial intelligence. https://unesdoc.unesco.org/ark:/48223/pf0000380455. Accessed 5 May 2024
United Nations Human Rights Office of the High Commissioner (2023a) Advancing responsible development and deployment of generative AI. The value proposition of the UN guiding principles on business and human rights. UN B-Tech Foundational Paper. https://www.ohchr.org/sites/default/

files/documents/issues/business/b-tech/advancing-responsible-development-and-deployment-of-GenAI.pdf. Accessed 5 May 2024
United Nations Human Rights Office of the High Commissioner (2023b) Taxonomy of human rights risks connected to generative AI. Supplement to B-Tech's Foundational Paper on the Responsible Development and Deployment of Generative. https://www.ohchr.org/sites/default/files/documents/issues/business/b-tech/taxonomy-GenAI-Human-Rights-Harms.pdf. Accessed 5 May 2024
Van Eechoud M (2021) Please share nicely—from Database directive to Data (governance) acts. Kluwer Copyright Blog http://copyrightblog.kluweriplaw.com/2021/08/18/please-share-nicely-from-database-directive-to-data-governance-acts/. Accessed 5 May 2024
Varytimidou C (2023) The new A(I)rt movement and its copyright protection: immoral or e-moral? GRUR Int 72(4):357. https://doi.org/10.1093/grurint/ikac153
Vesala J (2023) Developing artificial intelligence-based content creation: are EU copyright and antitrust law fit for purpose? IIC 54(5):351. https://doi.org/10.1007/s40319-023-01301-2
Vivant M (2018) Intelligence artificielle et propriété intellectuelle. Comm. Com. Électr., Study No. 18
Vivant M, Bruguière J-M (2019) Droit d'auteur et droits voisins, 4th edn. Dalloz, Paris
Zhang A (2023) China's short-sighted ai regulation. https://www.project-syndicate.org/commentary/risks-of-beijing-internet-court-ruling-allowing-copyright-of-ai-generated-content-by-angela-huyue-zhang-2023-12. Accessed 5 May 2024
Zirpoli C (2023) Generative artificial intelligence and copyright law. https://crsreports.congress.gov/product/pdf/LSB/LSB10922. Accessed 5 May 2024