ReCreating Europe

Rethinking digital copyright law for a culturally diverse, accessible, creative Europe

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Legal Disclaimer

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Acronyms

Legislation will be further described in a "Table of Legislation". Case law abbreviations will be further identified in "Table of Cases".

AI	Artificial Intelligence
AIaaA	Artificial Intelligence as a Service
AIPPI	Association for the Protection of Intellectual Property
AI-HLEG	EU AI High-Level Expert Group
CJEU	Court of Justice of the European Union
CLSPA	Conseil supérieur de la propriété littéraire et artistique
EC	European Commission
EU	European Union
EP	European Parliament
GUI	Graphic user interface
IP	Intellectual Property
IPO	Intellectual Property Office
JURI	EP Committee on Legal Affairs
ML	Machine Learning
MFN	Most-Favoured Nation
TRIPS	Agreement on Trade Related Aspects of Intellectual Property
UKIPO	United Kingdom Intellectual Property Office
UvA-IViR	University of Amsterdam-Institute for Information Law
WIPO	World Intellectual Property Organisation
WCT	WIPO Copyrigth Treaty
WPPT	WIPO Performances and Phonograms Treaty
WTO	World Trade Organisation

Executive Summary

This Interim Report refers to Task 3.2. of Work Package 3 – "Authors and Performers". This Task is titled "The Growing Role of AI machines as Producers of Literary and Artistic Works: Challenges to Human Authorship". As we describe below, in light of the evolution of policy in scholarship in this field we have adjusted the focus of the task to better reflect these developments and provide an original contribution to this emerging debate.

The aim of the **Interim Report** is to briefly describe the outline and structure of the final report D3.5 Final report on the impact of IA authorship expected to be released on M21. From a substantive perspective, it maps out at a high level the state of our work thus far and our main avenues of research going forward, including empirical research through interviews. The Interim Report serves to obtain internal peer-reviewers' input on the:
- study scope, and in particular topics excluded from our analysis;
- study structure, its clarity and coherence;
- insights on recent empirical studies on the topic;
- selection of AI projects for the case studies;
- content of interview questions.

The research **problem**: There is legal uncertainty about application of EU copyright and related rights law to outputs generated by or with the assistance of artificial intelligence (AI) systems, tools or techniques (AI outputs).

The research **question**: How can and should EU copyright and related rights law protect AI outputs[1]? The research **aim** of our study is to develop interpretative guidelines and/or policy recommendations on increasing legal certainty with regard to the legal status of AI outputs in EU copyright and related rights law, especially musical output, and including questions of authorship an ownership. The research **objectives** of the study are the following:
- to analyse protection of AI outputs under EU copyright and related rights law;
- to analyse attribution of authorship and ownership to (natural and legal) persons involved in the creation or production of AI outputs;
- to analyse the legal impact of the recognition of copyright and related rights protection to AI outputs on the exercise of rights;
- to formulate interpretative guidelines and/or policy recommendations on increasing legal certainty regarding the protection, authorship, ownership and exercise copyright and/related rights over AI outputs, especially musical outputs.

The **methodology** of the study consists of the doctrinal legal research and empirical research through interviews. It includes in particular:
- Extensive literature review (legal scholarship; empirical literature on AI outputs; already published interviews conducted by journalists or other researchers with artists, engineers and managers of AI projects in the music sector);
- Case studies (combining collection of publicly available information about AI projects/services, such as terms of use and public communications; testing services' operations; and interviews; see Case Studies for further details); and
- Analysis (thematic analysis of the scholarship; further development of the analytical tool for assessment of copyright protection of AI outputs comprising 4-step test with 3 phases of the AI

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[1] Except where explicitly stated otherwise or is apparent from the text, 'AI outputs' in the present study refers to outputs in musical domain.

creative process, developed in UvA-IViR 2020 study;[2] confronting results of doctrinal legal analysis with empirical information collected through the case studies on practices of market actors).

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[2] P. Bernt Hugenholtz et al., 'Trends and Developments in Artificial Intelligence: Challenges to the Intellectual Property Rights Framework', Final Report for the European Commission (IViR and JIIP, 2020), 77–84.

1. Introduction

The legal debate surrounding the intellectual property (IP) protection of AI outputs is not wholly new. Discussions on authorship and inventorship by computers date back more than half a century.[3] The interface between AI and IP has since gained renewed interest and it is possible to identify significant literature on his topic that relates to both copyright and patent law.[4,5]

Recent developments in AI technologies have spilled over to the creative industries, making the use and discussion of AI systems for cultural production more pressing.[6] Today, these systems are used to generate all manner of literary and artistic content, including translations, news articles, poetry, scripts, novels, photos, paintings, etc.[7]

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[3] See e.g. F. Fromm, "Der Apparat Als Geistiger Schopfer," GRUR, 1964; Karl F. Jr. Milde, "Can a Computer Be and Author or an Inventor," Journal of the Patent Office Society 51, no. 6 (1969): 378–406; Stephen Hewitt, "Protection of Works Created by the Use of Computers," New L.J. 133 (1983); Timothy L. Butler, "Can a Computer Be an Author - Copyright Aspects of Artificial Intelligence," Hastings Comm. & Ent.L.J. 4 (1982); Pamela Samuelson, "Allocating Ownership Rights in Computer-Generated Works," in Symposium Cosponsored by University of Pittsburgh Law Review and The Software En on The Future of Software Protection (Pittsburgh, Pennsylvania, USA: University of Pittsburgh Press, 1986), 1185–1228; Daniel Gervais, "The Protection under International Copyright Law of Works Created with or by Computers," IIC - International Review of Intellectual Property and Competition Law 5 (1991): 629–60.

[4] Maria Iglesias, Sheron Shamuilia, and Amanda Anderberg, *Intellectual Property and Artificial Intelligence: A Literature Review*, vol. EUR 30017 EN (Luxembourg: Joint Research Centre (JRC) of the European Commission, 2021), https://data.europa.eu/doi/10.2760/8600.

[5] For some leading references on copyright law, see: Bruce E. Boyden, "Emergent Works," *The Columbia Journal of Law & the Arts* 39, no. 3 (June 20, 2016): 377–94; Annemarie Bridy, "The Evolution of Authorship: Work Made by Code," *Columbia Journal of Law & the Arts* 39 (2016): 395–401; Annemarie Bridy, "Coding Creativity: Copyright and the Artificially Intelligent Author," *Stanford Law Review* 5, no. 25 (July 18, 2011): 1–28; Carys J. Craig and Ian R. Kerr, "The Death of the AI Author," *Osgoode Legal Studies Research Paper*, March 25, 2019, https://doi.org/10.2139/ssrn.3374951; Jean-Marc Deltorn and Franck Macrez, "Authorship in the Age of Machine Learning and Artificial Intelligence," in *The Oxford Handbook of Music Law and Policy* (Rochester, NY: OUP, 2018); Robert Denicola, "Ex Machina: Copyright Protection for Computer-Generated Works," *Rutgers University Law Review* 69 (2016): 251–87; Daniel J. Gervais, "The Machine As Author," *Iowa Law Review* 105 (March 25, 2019): 19–35; Jane C. Ginsburg and Luke Ali Budiardjo, "Authors and Machines," *Berkeley Technology Law Journal* 34, no. 2 (October 21, 2019): 343–448; James Grimmelmann, "There's No Such Thing as a Computer-Authored Work — And It's a Good Thing, Too," *Columbia Journal of Law & the Arts* 39 (May 4, 2017): 403–16; Andrés Guadamuz, "Do Androids Dream of Electric Copyright? Comparative Analysis of Originality in Artificial Intelligence Generated Works," *Intellectual Property Quarterly* 2 (June 5, 2017): 169–86; Ana Ramalho, "Will Robots Rule the (Artistic) World? A Proposed Model for the Legal Status of Creations by Artificial Intelligence Systems," *Journal of Internet Law* 21, no. 1 (June 13, 2017): 12–25, h; Sam Ricketson, "The 1992 Horace S. Manges Lecture - People or Machines: The Bern Convention and the Changing Concept of Authorship," *Columbia-VLA Journal of Law & the Arts* 16, no. 1 (1992 1991): 1–38. For some leading references on patent law, see: IVIR STUDY, p. X, fn X

[6] *See e.g.* in this respect recent editorials in specialised IP reviews: Daniel Gervais, "Is Intellectual Property Law Ready for Artificial Intelligence?," *GRUR International* 69, no. 2 (February 1, 2020): 117–18; Jane C. Ginsburg, "People Not Machines: Authorship and What It Means in the Berne Convention," *IIC - International Review of Intellectual Property and Competition Law* 49, no. 2 (January 29, 2018): 131–35; Gerald Spindler, "Copyright Law and Artificial Intelligence," *IIC - International Review of Intellectual Property and Competition Law* 50, no. 9 (November 1, 2019): 1049–51.

[7] *See, e.g.,* Google Translate, https://translate.google.com/ (translation), Deep L, https://www.deepl.com/en/translator (translation); OpenAI, Musenet, https://openai.com/blog/musenet/ (music generation), OpenAI, Jukebox, https://openai.com/blog/jukebox/ (music generation), Talk to Transformer, https://talktotransformer.com (text generation) The Next Rembrandt, https://www.nextrembrandt.com/ (artistic portrait), Christies, "Is artificial intelligence set to become art's next medium?" (12 December 2018) https://www.christies.com/features/A-collaboration-between-two-artists-one-human-one-a-machine-9332-1.aspx, OpenAI, Image GPT (17 June 2020), https://openai.com/blog/image-gpt/ (image generation), and Annalee Newitz, "An AI Wrote All of David Hasselhoff's Lines in This Bizarre Short Film," *Ars Technica*, April 25, 2017, https://arstechnica.com/gaming/2017/04/an-ai-wrote-all-of-david-hasselhoffs-lines-in-this-demented-short-film/. (movie script generation). Additional examples of AI outputs susceptive of copyright protection can be found throughout this report

In the musical sector in particular, AI systems have been used for creating content of different complexity, genres and styles,[8] with various levels of human involvement and subsequent uses of created content.

At the same time, as we highlight below, there is significant policy momentum in the EU to regulate AI technology in general,[9] and its use in the context of specific areas of the law, such as copyright.[10]

Our research does not start from a blank slate. In addition to the existing body of scholarship and policy materials, our analysis builds on recent work by some of the authors of this report.[11]

The particular focus of our research is on what we term **"musical" AI outputs**, meaning any such output that relates to musical content and is susceptible of protection by copyright and/or related rights, such as musical compositions, lyrics, performances, phonograms (sound recordings), and broadcasts (webcasts) of the same. We have selected the lens of the musical sector for different reasons:

- Music has historically been a driving force for the development of copyright law as it adjusts to new technologies. Conclusions on the protection of AI musical outputs could have a relatively high policy significance.

- The EU copyright *acquis* is arguably the most developed in relation to the protection and exploitation of musical subject matter (copyright protection of musical works; related rights protection for performances, phonograms and broadcasts; collective licensing mechanisms, including multi-territorial licensing of online rights in musical works, mechanisms of statutory remuneration rights and mandatory collective management, etc). This allows for a more comprehensive "stress test" of the legal framework through case studies and hypotheticals. Study focused on AI musical outputs permits to examine the application and use of a wide variety of legal protection mechanisms, many of which are also relevant for other creative domains.

- There is already a rich body of examples of diverse AI projects and businesses used for the creation of musical outputs, as well as some observable legal practice(s) as it relates to the attribution of authorship, ownership, exercise and exploitation of AI outputs. AI projects and businesses in other creative domains employ identical or similar practices.

There is much debate in policy and scholarship on the use of the terms AI-*assisted* and AI-*generated* outputs.[12] As we explain below, in this report we will not use these terms at the outset to identify the type of AI output we examine. Rather, we will use them to mark a distinction in legal qualification between musical AI outputs that lack sufficient human intervention or contribution to attract copyright protection (AI-generated), and those where that intervention or contribution is sufficient to attract protection (AI-assisted).[13]

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[8] Mark Perry and Thomas Margoni, 'From Music Tracks to Google Maps: Who Owns Computer Generated Works?', *Computer Law and Security Review* 26 (2010): 621–29; Jared Vasconcellos Grubow, 'O.K. Computer: The Devolution of Human Creativity and Granting Musical Copyrights to Artificially Intelligent Joint Authors', *Cardozo Law Review* 40, no. 1 (2018): 387–423; François Pachet, Pierre Roy, and Benoit Carré, 'Assisted Music Creation with Flow Machines: Towards New Categories of New', in *Handbook of Artificial Intelligence for Music* (Springer, 2021), http://arxiv.org/abs/2006.09232; Jean-Pierre Briot and François Pachet, 'Music Generation by Deep Learning - Challenges and Directions', *Neural Computing and Applications* 32, no. 4 (February 2020): 981–93, https://doi.org/10.1007/s00521-018-3813-6; Rebecca Fiebrink, Dan Trueman, and Perry R Cook, 'A Meta-Instrument for Interactive, On-the-Fly Machine Learning' (International Conference on New Interfaces for Musical Expression (NIME), Pittsburgh, PA, 2009), 280–85; Keith Muscutt and David Cope, 'Composing with Algorithms: An Interview with David Cope', *Computer Music Journal* 31, no. 3 (2007): 10–22; Bob L Sturm, Joao Felipe Santos, and Iryna Korshunova, 'Folk Music Style Modelling by Recurrent Neural Networks with Long Short Term Memory Units', 2015; Rebecca Fiebrink and Baptiste Caramiaux, 'The Machine Learning Algorithm as Creative Musical Tool', in *The Oxford Handbook of Algorithmic Music* (OUP, 2018), http://arxiv.org/abs/1611.00379.

[9] *See e.g.* the recent EC, 'White paper On Artificial Intelligence – A European approach to excellence and trust', *COM (2020) 65 final,* 19 February 2020 (summarizing policy initiatives and discussing a future EU regulatory framework).

[10] See 2.2 below.

[11] We refer in particular to [IViR Study 2020] and Daniel J. Gervais, 'The Machine as Author', *Iowa Law Review* 105, no. 5 (2020): 2053–2106.

[12] cite

[13] See infra at #. See also the discussion in IViR study at #

Our focus on the copyright protection of AI music outputs means not only that other protected subject matter (e.g., audio-visual content) is relegated to the background, but also that some topics at the intersection of AI and copyright law are excluded from our analysis. Such topics outside study's scope include:

- The protection of AI systems as such;
- The legal protection of inputs to an AI system, such as in the case of text-and-data mining (except to the extent necessary to discuss issues related with AI outputs, such as derivative works[14]);
- The use of AI systems for purposes *other than* in the generation of musical outputs, including algorithmic copyright enforcement, recommender (playlisting) systems[15]; business intelligence; prediction of commercial success ("hits making")[16].

To the extent possible, this study employs a technologically neutral approach when discussing the legal protection of AI outputs. We clarify below our working definition of AI and our basic understanding of the technology relevant to assess AI musical outputs. We will also draw the distinction between AI and other technologies used for creating music content. Beyond that, our analysis echoes the call of policy makers for a technologically neutral approach (see 2.2. below), thereby attempting to avoid obsolescence associated with the fast pace of technological developments in this field.[17]

The scope of our analysis is delimited to EU copyright law, interpreted in light of international law. This means that the analysis covers the EU copyright *acquis*, which is mainly comprised of Directives, and its interpretation by the Court of Justice of the EU (CJEU). The most relevant instruments in this respect are the InfoSoc Directive (2001/29/EC), the Database Directive (2001/29/EC), the Term Directive (2006/116/EC), the Computer Programs Directive (2009/24/EC), the Enforcement Directive (2004/48/EC) the Copyright in the Digital Single Market (CDSM) Directive (2019/790).[18] The relevant international legal framework includes the Berne Convention, the Rome Convention, the TRIPS Agreement, the WIPO Copyright Treaty (WCT), and the WIPO Performances and Phonograms Treaty (WPPT).[19]

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[14] See 4.2 below.

[15] For a general definition, see art. 2(o) Proposed DSA: 'recommender system' means a fully or partially automated system used by an online platform to suggest in its online interface specific information to recipients of the service, including as a result of a search initiated by the recipient or otherwise determining the relative order or prominence of information displayed.

[16] Alexandra Bensamoun, Joëlle Farchy, and Paul-François Schira, 'Mission Intelligence Artificielle et Culture', Rapport final (Conseil Supérieur de la Propriété Littéraire et Artistique (CSPLA), 2020), 19.

[17] 'European Parliament Resolution of 20 October 2020 on Intellectual Property Rights for the Development of Artificial Intelligence Technologies (2020/2015(INI)), P9_TA(2020)0277' (n.d.), paras 7 and 15.

[18] Respectively: Directive (EU) 2019/790 of the European Parliament and of the Council of 17 April 2019 on copyright and related rights in the Digital Single Market and amending Directives 96/9/EC and 2001/29/EC [2019] OJ L 130/92 (InfoSoc Directive); Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases [1996] OJ L 77/20 (Databases Directive); Directive 2006/116/EC of the European Parliament and of the Council of 12 December 2006 on the term of protection of copyright and certain related rights (codified version) [2006] OJ L 372/12, as amended by Directive 2011/77/EU of the European Parliament and the Council of 27 September 2011 amending Directive 2006/116/EC on the term of protection of copyright and certain related rights [2011], OJ L 265/1 (Term Directive); Directive 2009/24/EC of the European Parliament and of the Council of 23 April 2009 on the legal protection of computer programs (codified version) [2009] OJ L 111/16 (Computer Programs Directive); Directive 2004/48/EC of the European Parliament and of the Council of 29 April 2004 on the enforcement of intellectual property rights [2004], OJ L 195/16; Corrigenda in OJ 2004 L 195/16 and OJ 2007 L 204/27 (IPRs Enforcement Directive); Directive (EU) 2019/790 of the European Parliament and of the Council of 17 April 2019 on copyright and related rights in the Digital Single Market and amending Directives 96/9/EC and 2001/29/EC [2019] OJ L 130/92 (CDSM Directive).

[19] Berne Convention for the Protection of Literary and Artistic Works, opened for signature Sept. 9, 1886, 828 U.N.T.S. 221 (Berne Convention); International Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organisations (Rome Convention) Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, 1869

This Interim Report consists of seven chapters, which aim to mirror the structure and content of the chapters in the final report.

After this introduction and outline (**Chapter 1**), **Chapter 2** will set out the basic technology and policy background (at EU level) to examine our research question.

Chapter 3 will then discuss the issue of protection of AI musical outputs by EU copyright and related rights law, as works and other subject matter. This chapter includes also a discussion on sui generis regimes, namely those of "computer-generated works" in some countries in Europe (Ireland and UK) and around the world. For analytical purposes, we separate the discussion of requirements of protection from that on the authorship and ownership of AI outputs, which we examine in the following Chapter.

Chapter 4 then will follow up with an analysis of authorship and initial ownership of AI outputs susceptible of protection as works (including the category of adaptations or derivative works) or other subject matter protected by related rights.

Chapter 5 will describe our research on the exercise of rights in relation to AI musical outputs. It looks into issues of rights management, contracts, collective licensing and the use of foreign AI output.

Chapter 6 will then map out and reviews interpretative proposals to solve the problems identified in our previous analysis and develop/advance additional proposals of our own.

Finally, **Chapter 7** will provide a summary of the preceding analysis. At this Interim Report stage, it also briefly identifies the normative angles for subsequent research and describes the next steps in the project.

U.N.T.S.299 (TRIPS Agreement); WIPO Copyright Treaty, Dec. 20, 1996, 2186 U.N.T.S. 121 (WCT); WIPO Performances and Phonograms Treaty, 1996 O.J. (L 89) (WPPT).

2. Technological and Policy Background

2.1. Basic starting point on the technology

This section will contain a short description of AI systems and advance a working definition of AI. This will be an updated and shortened version of what is contained in section 1.2 of UvA-IViR Study 2020.[20]

The purpose of the technological discussion is to permit differentiation between AI and other technologies used in music content creation as well as to offer an understanding of AI operation, with a focus on the phases of the creative process, human inputs and their impact on AI outputs.

The departure point for a **definition** of AI is two-fold. First, the definition advanced by the European Commission in its 2018 Communication. Second, the definition advanced by the AI High Level Expert Group (AI-HLEG)[21], which was meant as an update to the first.

The Commission's 2018 Communication on "Artificial Intelligence for Europe" advances the following definition:

> *"Artificial intelligence (AI) refers to systems that display intelligent behaviour by analysing their environment and taking actions – with some degree of autonomy – to achieve specific goals. AI-based systems can be purely software-based, acting in the virtual world (e.g. voice assistants, image analysis software, search engines, speech and face recognition systems) or AI can be embedded in hardware devices (e.g. advanced robots, autonomous cars, drones or Internet of Things applications). We are using AI on a daily basis, e.g. to translate languages, generate subtitles in videos or to block email spam. Many AI technologies require data to improve their performance. Once they perform well, they can help improve and automate decision making in the same domain. For example, an AI system will be trained and then used to spot cyber-attacks on the basis of data from the concerned network or system".[22]*

The proposed update by the AI-HLEG states that was established that proposed an update to the Commission definition as follows:

> *"Artificial intelligence (AI) systems are software (and possibly also hardware) systems designed by humans that, given a complex goal, act in the physical or digital dimension by perceiving their environment through data acquisition, interpreting the collected structured or unstructured data, reasoning on the knowledge, or processing the information, derived from this data and deciding the best action(s) to take to achieve the given goal. AI systems can either use symbolic rules or learn a numeric model, and they can also adapt their behaviour by analysing how the environment is affected by their previous actions. As a scientific discipline, AI includes several approaches and techniques, such as machine learning*

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[20] Hugenholtz et al., 'Trends and Developments in Artificial Intelligence: Challenges to the Intellectual Property Rights Framework', 21–27.

[21] https://ec.europa.eu/digital-single-market/en/high-level-expert-group-artificial-intelligence

[22] Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions: Artificial Intelligence for Europe. Brussels, 25.4.2018, COM(2018) 237 final, p.1. https://ec.europa.eu/transparency/regdoc/rep/1/2018/EN/COM-2018-237-F1-EN-MAIN-PART-1.PDF

> *(of which deep learning and reinforcement learning are specific examples), machine reasoning (which includes planning, scheduling, knowledge representation and reasoning, search, and optimisation), and robotics (which includes control, perception, sensors and actuators, as well as the integration of all other techniques into cyber-physical systems)."[23]*

The AI-HLEG definition is supported by a relevant statement to the effect that "[h]umans design AI systems directly, but they may also use AI techniques to optimise their design".[24]

Using these definitions as a basis and their several iterations in EU policy documents, we will then explain different types of AI systems to the extent required for our analysis on AI musical outputs.

We will draw a basic distinction between symbolic and statistical AI systems. This is useful to understand the different foundational approaches to developing AI technology, which may have an impact on the type of human intervention in such systems.

Our focus will then be on statistical systems, namely machine learning (ML), neural networks and deep learning (DL). These comprise most AI systems used today, including those used in to produce outputs of the type examined in this report. Within these, we will provide a basic explanation of supervised, unsupervised and reinforcement learning.

Importantly, we intent to tailor the extent and depth of our explanation in this section to the result of our interviews. In other words, if it results from the interviews that most AI musical outputs are generated by or with recourse for instance to supervised machine learning, then our description of that type of system and technique will be more detailed.

Since the point of attachment for our legal analysis is the outcome of a process of an AI system – the AI output – this section will conclude with a conceptual and terminological clarification, which was already briefly mentioned in the introduction chapter.

In the context of IP, some scholars make a distinction between "direct outputs" and "applications" resulting from an AI system, arguing that they give rise to "distinct legal issues".[25] Direct outputs may refer to predictions, recommendations (e.g., for a "daily mix" playlist on Spotify), correlations, clustering, etc. "Applications" are outputs that can "be put into practical use", such as in the area of IP subject matter.[26] Still, in the area of IP, this distinction is difficult to draw and may sometimes be artificial.

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[23] https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=56341

[24] AI-HLEG, 6 (& fn.3).

[25] Josef Drexl et al., 'Technical Aspects of Artificial Intelligence: An Understanding from an Intellectual Property Law Perspective', *Max Planck Institute for Innovation & Competition* 11, no. 3 (8 October 2019): 9, https://doi.org/10.2139/ssrn.3465577. NB that this is a distinct use than AI "application fields" (i.e. "different fields, areas or disciplines where AI techniques or functional applications may find application, such as transportation, agriculture or life and medical sciences.") and AI "functional applications" (e.g. speech and computer vision), as used in WIPO, 'WIPO Technology Trends 2019: Artificial Intelligence.' (World Intellectual Property Organization, 2019), 13, 24, https://public.ebookcentral.proquest.com/choice/publicfullrecord.aspx?p=5982426.

[26] Drexl et al., 'Technical Aspects of Artificial Intelligence', 9.

In the field of copyright, AI applications include, to name but a few, paintings, such as "The Next Rembrandt"[27] or "The Portrait of Edmond Belamy"[28]; text translations produced by the GP-T2[29] or more recently the GP-T3 text generator from Open AI[30] or the DeepL translator[31]; and musical compositions such as the "emotional soundtrack music" composed by AIVA[32] or the tracks produced for the "AI Song Contest".[33]

What varies is the "required degree of human contribution" for each application.[34] This view is consistent with technical descriptions of the "lifecycle" of AI systems, e.g. from the OECD, which identify a number of human interventions and contributions at different stages: planning and designing (e.g. defining requirements and objectives, prototyping), collecting and processing data (e.g. developing a dataset), and modelling (e.g. development of models or algorithms); "verification and validation" (e.g. performance tests and calibration); "deployment" (e.g. piloting and compatibility with external software); and "operation and monitoring" (e.g. assessment and correction of outputs for consistency with objectives).[35]

Many of the AI musical outputs under consideration in our report fall under the heading of "applications" or "productions". They denote some level of human contribution at different stages of the AI system lifecycle, often between the generation of an output and its publication or making available.

This does not mean that such intervention or contribution is always material to the protection of the output by copyright and related rights law.

Rather, it merely highlights that the focus of the legal inquiry – especially under copyright law – is on assessing the level of human contribution to (or intervention in) the lifecycle of an AI system, and the extent to which it is sufficiently connected to the AI output to merit protection as a copyright-protected work.

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[27] The Next Rembrandt, https://www.nextrembrandt.com/. See also Microsoft News, "Blurring the Lines Between Art, Technology and Emotion: The Next Rembrandt" (13 April 2016), https://news.microsoft.com/europe/features/next-rembrandt/

[28] See Christies, "Is artificial intelligence set to become art's next medium?" (12 December 2018) https://www.christies.com/features/A-collaboration-between-two-artists-one-human-one-a-machine-9332-1.aspx ("Portrait of Edmond Belamy (detail) created by GAN (Generative Adversarial Network)…";" This portrait, however, is not the product of a human mind. It was created by an artificial intelligence, an algorithm defined by that algebraic formula with its many parentheses. And when it went under the hammer in the Prints & Multiples sale at Christie's on 23-25 October, Portrait of Edmond Belamy sold for an incredible $432,500, signalling the arrival of AI art on the world auction stage.")

[29] See Open AI, GPT-2: 1.5B Release (5 November 2019), https://openai.com/blog/gpt-2-1-5b-release/ . See also James Vincent, "OpenAI Has Published the Text-Generating AI It Said Was Too Dangerous to Share," The Verge (blog), November 7, 2019, https://www.theverge.com/2019/11/7/20953040/openai-text-generation-ai-gpt-2-full-model-release-1-5b-parameters.

[30] On GPT-3, see: Brown, Tom B., Benjamin Mann, Nick Ryder, Melanie Subbiah, Jared Kaplan, Prafulla Dhariwal, Arvind Neelakantan, et al. "Language Models Are Few-Shot Learners." ArXiv:2005.14165 [Cs], July 22, 2020. http://arxiv.org/abs/2005.14165; and OpenAI. "OpenAI Licenses GPT-3 Technology to Microsoft." OpenAI (blog), September 22, 2020. https://openai.com/blog/openai-licenses-gpt-3-technology-to-microsoft/. For criticism, see Marcus, Gary, and Ernest Davis. "GPT-3, Bloviator: OpenAI's Language Generator Has No Idea What It's Talking about." MIT Technology Review. Accessed September 28, 2020. https://www.technologyreview.com/2020/08/22/1007539/gpt3-openai-language-generator-artificial-intelligence-ai-opinion/.

[31] Deep L, https://www.deepl.com/en/translator.

[32] AIVA, https://www.aiva.ai/

[33] VPRO, AI Song Contest, FAQ, https://www.vprobroadcast.com/titles/ai-songcontest.html

[34] Drexl et al., 'Technical Aspects of Artificial Intelligence', 9.

[35] In this paragraph we rely on the technical description of the "AI System Lifecycle" in OECD, *Artificial Intelligence in Society* (Paris: OECD, 2019), chap. 1, https://www.oecd.org/publications/artificial-intelligence-in-society-eedfee77-en.htm.

As noted above, we attempt to make this point clear by drawing a distinction between AI-*assisted* output, where human contribution is sufficient to merit copyright protection as a work, and AI-*generated* output, where it is not. (This analysis is further developed at 3.1).

For AI-generated outputs, which we qualify as "authorless" and outside the scope of copyright protection, related rights protection might still be available. (See analysis below at 3.2).

2.2. Relevant EU policy background

This section briefly describes recent legal policy developments in the EU on the intersection of copyright and AI, with a focus on the protection of AI outputs by copyright law.[36]

At the **EU institutional level**, there has been significant and wide-ranging policy work on the regulation of AI, namely from the EC and the European Parliament, including their associated research services.[37]

Most policy initiatives and research do not directly touch copyright protection of AI outputs.
For instance, the EC in the last years has published a number of Communications on the topic of AI. These include communications on "Artificial Intelligence for Europe" [38], a "Coordinated Plan on Artificial Intelligence" [39], "Building Trust in Human-Centric Artificial Intelligence"[40], the "European Strategy for Data"[41], and the "White Paper on AI: a European approach to excellence and trust".[42]

The EC also set up the AI-HLEG, which has developed important groundwork in this area.[43]

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[36] For a discussion of recent developments and issues at the intersection of AI and patent law, see IViR Study...

[37] See, for a recent overview, Jędrzej Niklas and Lina Dencik, 'European Artificial Intelligence Policy: Mapping the Institutional Landscape', Working Paper DATAJUSTICE project (DATAJUSTICE, 2020). For a gateway to the multiple EC initiatives in this area, European Commission, Strategy, Shaping Europe's digital future, Policies, "Artificial intelligence", https://ec.europa.eu/digital-single-market/en/artificial-intelligence. Regarding the work of research services associated with the EP and EC – e.g. the EPRS and the JRC – such work is not detailed in this section but is referred to throughout the text, where directly relevant. Among the most relevant recent work in this respect, see: Maria Iglesias Portela, Sheron Shamuilia, and Amenda Anderberg, 'Intellectual Property and Artificial Intelligence - A Literature Review' (Luxembourg: European Commission, 17 December 2019), https://publications.jrc.ec.europa.eu/repository/bitstream/JRC119102/intellectual_property_and_artificial_intelligence_jr c_template_final.pdf.; Ronan Hamon, Henrik Junklewitz, and Ignacio Sanchez Martin Jose, 'Robustness and Explainability of Artificial Intelligence', EUR - Scientific and Technical Research Reports (Publications Office of the European Union, 2020), JRC119336, https://publications.jrc.ec.europa.eu/repository/handle/111111111/58835.; B. Delipetrev et al., 'AI Watch : Defining Artificial Intelligence : Towards an Operational Definition and Taxonomy of Artificial Intelligence', JRC Working Papers, AI Watch (Joint Research Cnetre, 27 February 2020), http://op.europa.eu/en/publication-detail/-/publication/6cc0f1b6-59dd-11ea-8b81-01aa75ed71a1/language-en.

[38] EC, 'Artificial Intelligence for Europe', Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, COM (2018) 237 Final, 25 April 2018.

[39] EC, 'Coordinated plan on Artificial Intelligence', Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, COM (2018) 795 Final, 7 December 2018.

[40] EC, 'Building Trust in Human-Centric Artificial Intelligence', Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, COM (2019) 168 final, 8 April 2019.

[41] EC, European strategy for data, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Study Guidelines 2020, COM (2020) 66 final, 19 February 2020.

[42] EC, 'White paper On Artificial Intelligence – A European approach to excellence and trust', COM (2020) 65 final, 19 February 2020.

[43] On which see European Commission, Strategy, Shaping Europe's digital future, Policies, "High Level Expert Group on Artificial Intelligence", https://ec.europa.eu/digital-single-market/en/high-level-expert-group-artificial-intelligence . See also the 2018 Communication on "Artificial Intelligence for Europe", as it calls for reflection on the interactions between AI

Still, these communications either do not discuss IP at all or contain only indirect references to it, none of which is directly relevant to this report.[44]

For its part, the European Parliament (EP) has produced some relevant policy documents.
In February 2017, a Resolution with recommendations on "Civil Law Rules on Robotics" called on the EC to support a horizontal and technologically neutral approach to IP that could be applied to the various sectors in which robotics could be employed.[45] In this context and relevant to our analysis, an Explanatory Statement on "Civil Law Rules on Robotics" by the EP's Committee on Legal Affairs (JURI) proposes (inter alia) "the elaboration of criteria for 'own intellectual creation' for copyrightable works produced by computers or robots".[46]
In February 2019, the EP passed a Resolution on a "comprehensive European industrial policy on artificial intelligence and robotics". This resolution renewed the earlier call to the EC to "support a horizontal and technologically neutral approach to intellectual property applicable to the various sectors in which robotics could be employed" and underscored the "need to monitor the relevance and efficiency of rules on intellectual property rights to govern the development of AI."[47]
Finally, on 20 October 2020, the European Parliament adopted a resolution on "intellectual property rights for the development of artificial intelligence technologies".[48] Regarding AI outputs, the EP resolution contains the following important passage.

> *"[t]akes the view that technical creations generated by AI technology must be protected under the IPR legal framework in order to encourage investment in this form of creation and improve legal certainty for citizens, businesses and, since they are among the main users of AI technologies for the time being, inventors; considers that works autonomously produced by artificial agents and robots might not be eligible for copyright protection, in order to observe the principle of originality, which is linked to a natural person, and since the concept of 'intellectual*

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and IP rights "from the perspective of both intellectual property offices and users, with a view to fostering innovation and legal certainty in a balanced way". It adds that the use of "AI to create works can have implications on intellectual property, with questions arising for instance on patentability, copyright and right ownership". EC, 'Artificial Intelligence for Europe', Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, COM (2018) 237 Final, 25 April 2018. p. 15 (fn. 52). Beyond that, the most relevant initiatives for our purposes are the following: EC, 'Trends and Developments in Artificial Intelligence – Challenges to the Intellectual Property Rights Framework', Shaping Europe's digital future, *SMART 2018/0052,* March 2019 ("Call for Tender") (leading to the IViR Study 2020); and EC, CNECT/2020/OP/0009 — Study on Copyright and New technologies: Copyright Data Management and Artificial Intelligence — Smart 2019/0038.

[44] The Communication on "An European Strategy for Data" does however discuss possible legislative intervention in the area of IP: ""evaluating the IPR framework with a view to further enhance data access and use (including a possible revision of the Database Directive41and a possible clarification of the application of the Trade Secrets Protection Directive42as an enabling framework)"". See EC, European strategy for data, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Study Guidelines 2020, COM (2020) 66 final, 19 February 2020, p. 13

[45] EP, Resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics (2015/2103(INL)), paras 136 – 137 (Interoperability, access to code and intellectual property rights).

[46] EP JURI, 'Explanatory Statement', *European Parliament* 2017, # par. Intellectual property rights, data protection and data ownership (elaborating also on the on the need to come forward 'with a balanced approach to intellectual property rights when applied to hardware and software standards and codes that protect innovation and at the same time foster innovation').

[47] EP, 'Resolution on a comprehensive European industrial policy on artificial intelligence and robotics', *(2018/2088 (INI)),* 12 February 2019.

[48] European Parliament resolution of 20 October 2020 on intellectual property rights for the development of artificial intelligence technologies (2020/2015(INI)), P9_TA-PROV(2020)0277, available at https://www.europarl.europa.eu/doceo/document/TA-9-2020-0277_EN.html.. See also the preceding DRAFT REPORT on intellectual property rights for the development of artificial intelligence technologies (2020/2015(INI)), Committee on Legal Affairs of the EU Parliament, (Rapporteur: Stéphane Séjourné), 24.4.2020, https://www.europarl.europa.eu/doceo/document/JURI-PR-650527_EN.html?redirect.

creation' addresses the author's personality; calls on the Commission to support a horizontal, evidence-based and technologically neutral approach to common, uniform copyright provisions applicable to AI-generated works in the Union, if it is considered that such works could be eligible for copyright protection; recommends that ownership of rights, if any, should only be assigned to natural or legal persons that created the work lawfully and only if authorisation has been granted by the copyright holder if copyright-protected material is being used, unless copyright exceptions or limitations apply; stresses the importance of facilitating access to data and data sharing, open standards and open source technology, while encouraging investment and boosting innovation".[49]

We will return to some of the points and themes of this passage throughout this report.

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[49] European Parliament resolution of 20 October 2020 on intellectual property rights for the development of artificial intelligence technologies (2020/2015(INI), para. 15.

3.   Protection of AI output by copyright and related rights

This chapter deals with the requirements for protection for AI musical outputs in EU law. The chapter addresses the key question of whether and to what extent is an AI (musical) output protected by copyright and related rights under EU law, as interpreted by CJEU and in light of the relevant international law.

In international and EU copyright law requirements for protection as a "work" and authorship are but "two sides of the same coin".[50] There is no work without an author. Still, for reasons of analytical clarity, we limit the analysis in this Chapter to requirements for protection of AI outputs by copyright and/or related rights and examine the attribution of authorship and ownership to different persons involved in the creative process separately in Chapter 0.

This chapter starts with an analysis of question of recognition of copyright protection under EU law (3.1). This analysis builds upon our previous work[51] in developing a four-step test and three phases of the creative process for the assessment of whether AI outputs qualify as "works" under EU copyright law. We attempt to provide added value here by critically reflecting on the core aspects of test and applying it to musical outputs. The analytical framework of the three phases of the AI creative process will serve for analysing human interventions and contributions during case studies. The analysis then moves to related rights requirements for protection as "other subject matter" (3.2), namely performances (3.2.1), phonograms (3.2.2) and broadcasts (3.2.3).This is followed by an examination of national sui generis regimes for the protection of computer-generated works (3.3.). This discussion is motivated by the policy attention to this type of regimes and by the lack of empirical information permitting their comparison with copyright protection under the general copyright regime. We then provide our interim conclusions (3.4).

3.1.   Copyright

3.1.1. Requirements for protection of works in International and EU Law

International copyright law provides some guidance as to requirements for protection of works that is of relevance to the legal qualification of AI outputs. In particular, art. 2(1) Berne Convention advances a broad definition of "literary and artistic works"

> *The expression "literary and artistic works" shall include **every production in the literary, scientific and artistic domain, whatever may be the mode or form of its expression, such as** books, pamphlets and other writings; lectures, addresses, sermons and other works of the same nature; dramatic or dramatico-musical works; choreographic works and entertainments in dumb show; musical compositions with or without words; cinematographic works to which are assimilated works expressed by a process analogous to cinematography; works of drawing, painting, architecture, sculpture, engraving and lithography; photographic works to which are assimilated works expressed by a process analogous to photography; works of applied art; illustrations, maps, plans, sketches and three-dimensional works relative to geography, topography, architecture or science.*

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[50] [Cite]

[51] Hugenholtz et al., 'Trends and Developments in Artificial Intelligence: Challenges to the Intellectual Property Rights Framework', 77–84.

The broad open clause allows for new types of subject matter to qualify as "works" beyond those listed as examples. This provision is incorporated by reference in the TRIPS Agreement and WCT.[52] It is also indirectly integrated in the EU legal order.[53] (All EU MS are members of the Berne Union, and the EU is bound by TRIPS and WCT).

The Berne Convention refers to "original works" and implicitly advances a requirement of originality.[54] Although such a requirement is not defined, it is commonly understood that the Convention's definition of "work" entails a "requirement of human intellectual effort or creativity.[55]

As noted elsewhere, the imposition of an originality requirement does not preclude that a work is expressed with the assistance or aid of a machine or software.[56]
This is not only recognised in the types of examples provided in art. 2(1) Berne Convention (such as photographic works and cinematographic works), but it also follows from the development of this area of law in parallel with technology.

As regards the requirement of "human" creativity inherent to the originality standard, art. 2(6) makes clear that copyright protection "shall operate for the benefit of the author and his successors in title".

Although the concept of "author" is not defined, the Convention's *droit d'auteur* roots, "its text and historical context strongly suggest that "author" and "authorship" for purposes of the Convention refer to the natural person who created the work", i.e., a human author.[57]
- *We will deal with human authorship in a separate Chapter (4).*

The upshot is that the Berne Convention only obliges Contracting States to protected works of human authorship.[58] In other words, only AI outputs that meet the requirement of human originality – as it is interpreted regionally and nationally – *must* be protected by copyright under the obligations arising from international law.
- *A possible additional argument is given under art. 27 UDHR See IViR Study and Gervais:*[59]

> *"the Universal Declaration on Human Rights (UDHR) protects the moral and material interests of authors resulting from scientific, literary or artistic production. Given that human rights by definition vest in human beings, the concept of authorship under the UDHR necessarily refers to human authorship. See also Article 17(1)(c) of the International Covenant on Economic, Social and Cultural Rights (ICESCR).[60]*

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[52] *See* art. 9(1) TRIPS and art. 3 WCT.

[53] *See e.g.* Case C-277/10 Martin Luksan v Petrus van der Let (2012) ECLI:EU:C:2012:65 (*Luksan*), para. 59, and Case C-310/17 Levola Hengelo BV v Smilde Foods BV (2018) ECLI:EU:C:2018:899 (*Levola Hengelo*), para. 38.

[54] On the (implicit) requirement of originality in international copyright law, see for example Daniel J. Gervais, 'The Protection of Databases', *Chicago-Kent Law Review* 82, no. 3 (2007), https://papers.ssrn.com/abstract=1116643.

[55] Goldstein/Hugenholtz, 4th ed., p. 176

[56] [IViR Study 2020]

[57] IViR study and sources cited therein. Among the multiple references to "author" in the Convention see e.g. art. 6bis on moral rights

[58] Jane C. Ginsburg, 'People Not Machines: Authorship and What It Means in the Berne Convention', *IIC - International Review of Intellectual Property and Competition Law* 49, no. 2 (29 January 2018): 135, https://doi.org/10.1007/s40319-018-0670-x.

[59] Art. 27 (2) UDHR.

[60] International Covenant on Economic, Social and Cultural Rights, adopted by the United Nations General Assembly on 16 December 1966, Resolution 2200A (XXI). Committee on Economic, Social and Cultural Rights, General Comment 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 (article 15, paragraph 1 (c), of the Covenant), 12 January 2006, UN Doc. No. E/C.12/GC/17.

Naturally, this raises the question of whether a country may protect AI outputs as works under national (or regional) law even absent the requirement of human creativity? Furthermore: should it decide to do so, do such works benefit from the regime of protection afforded in the Berne Convention, TRIPS Agreement and WCT? The answer to this question is important for the application of international treaty obligations on national treatment, reciprocity, minimum standards of protection.

Requirements for protection of a work of authorship are mostly non-harmonised in EU law. Despite that, the CJEU interpretative activity has had a harmonizing influence on the EU concept of work.
Until 2009, it was generally understood that originality and the concept of 'work' were only partly harmonized at the EU level, namely in respect of: computer programs (Art. 1 and recitals 7-8 of the Computer Programs Directive), photographs (Art. 6 and recital 16 of the Term Directive), original databases (Art. 3(1) and recitals 15 and 16 of the Database Directive)
This much was expressly recognized by the EC:

> *'Up to now, the notion of originality has not been addressed in Community legislation in a systematic manner … On these occasions, the Community legislator has considered it necessary to take account of the special features or the special technical nature of the category of work in question. These special cases aside, Member States remain free to determine what level of originality a work must possess for granting it copyright protection …'[61]*

However, starting with *Infopaq*, a number of CJEU judgements have changed this and effectively harmonized the concept of work. Key cases include:
- C-05/08 Infopaq International v Danske Dagblades Forening, ECLI:EU:C:2009:465 ;
- Joined Cases C-403/08 and C-429/08, Murphy/Premier League
- C-145/10 Painer, ECLI:EU:C:2011:798;
- C-469/17 Levola Hengelo, ECLI:EU:C:2019:623;
- C-469/17 Funke Medien NRW GmbH v Bundesrepublik Deutschland, ECLI:EU:C:2019:623;
- C-683/17 Cofemel Sociedade de Vestuário SA v G-Star Raw CV,ECLI:EU:C:2019:721.

Not only the legal framework but also these CJEU cases draw a clear line between art. 2(1) Berne Convention and the concept of work in EU law.[62]

From these cases it is possible to conclude that subject matter qualifies as work under EU copyright law if it:[63]
- It is of a type that leaves scope for the exercise of [free and] creative choices; and
- its creation involves the exercise of free and creative choices and bears the personal mark of its creator.

A fundamental consequence of the link to the Berne Convention and the standard of originality developed in CJEU case law is that works of authorship require a human author.
- *This requirement can be described as the "anthropocentric focus" of EU law on (human) authorship*.[64]

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[61] Commission Staff Working Paper on the review of copyright,
SEC(2004)995, p. 14
[62] See IViR Study
[63] NB using here an adaptation of Pila and Torremans' 2 stage test followed by the CJEU
[64] Hugenholtz et al., 'Trends and Developments in Artificial Intelligence: Challenges to the Intellectual Property Rights Framework', 69; 'Mezei - 2021 - From Leonardo to the Next Rembrandt – The Need for or AI Pessimism in the Age of Algorithms', n.d., 393 and 403.

- The requirement of human authorship in relation to photographs (art. 6 Term Directive) is specifically spelled out in Opinion AG Trstenjak in *Painer*, para. 121.

The upshot is that under EU copyright law any AI output lacking sufficient human creative effort expressing the exercise of free and creative choices and bearing the personal stamp of its human creator does not qualify as a copyright-protected work. Consequently, such output is – from a copyright perspective – in the public domain.

This conclusion appears in line with most of the scholarship available on this topic.

- A 2021 literature review on intellectual property and AI by the JRC concludes that:

  "Most authors conclude that, under present law, AI-generated works might not be eligible for copyright protection. This is because works created solely by machines cannot be considered original in the sense of copyright law".[65]

- Mezei argues that AI-generated content is in the public domain[66];
- 57 surveyed experts in technology policy, intellectual property, public policy/administration, economics and software, agreed or strongly agreed that AI-generated outputs ("works independently produced by AI without any creative input or intervention from a human author") are in the public domain.[67];
- on difficulties of the legal qualification of AI output, see also Report of the International Association for the Protection of Intellectual Property (AIPPI) on copyright in artificially generated works, based on survey responses of 30 national groups and independent members of the AIPPI;[68]
- 2020 EP Resolution: "works autonomously produced by artificial agents and robots might not be eligible for copyright protection, in order to observe the principle of originality, which is linked to a natural person, and since the concept of 'intellectual creation' addresses the author's personality"[69]
- IViR Study 2020: "if an AI system is programmed to automatically execute content without the output being conceived or redacted by a person exercising creative choices, there will be no "work"."[70]

From both an International and an EU law perspective, including CJEU case law, it is possible to derive a four-step test to examine whether a specific subject matter, in this case AI musical outputs, qualifies as a "work" under EU law. This test, developed in the [IViR Study 2020], is further developed in the subsequent section.

3.1.2. Proposal for copyright assessment of AI outputs

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[65] Iglesias, Shamuilia, and Anderberg, *Intellectual Property and Artificial Intelligence*, EUR 30017 EN:14.

[66] Péter Mezei, 'From Leonardo to the Next Rembrandt – The Need for AI-Pessimism in the Age of Algorithms', *UFITA* 2 (2021): 408 and 411, https://doi.org/10.2139/ssrn.3592187; Ana Ramalho, 'Will Robots Rule the (Artistic) World? A Proposed Model for the Legal Status of Creations by Artificial Intelligence Systems', *Journal of Internet Law* 21, no. 1 (2017): 22; Georges Azzaria, 'Intelligence Artifi Cielle et Droit d'auteur : L'hypothèse d'un Domaine Public Par Défaut', *Les Cahiers de Propriété Intellectuelle* 30, no. 3 (2018): 925–46.

[67] Kalin Hristov, 'Artificial Intelligence and the Copyright Survey', *Journal of Science Policy & Governance* 16, no. 1 (2020): 11–13 and 16.

[68] Jonathan P. Osha et al., 'Study Question – Copyright/Data Copyright in Artificially Generated Works', Summary Report (International Association for the Protection of Intellectual Property (AIPPI), 2019).

[69] European Parliament Resolution of 20 October 2020 on intellectual property rights for the development of artificial intelligence technologies (2020/2015(INI)), P9_TA(2020)0277, para. 15.

[70] Hugenholtz et al., 'Trends and Developments in Artificial Intelligence: Challenges to the Intellectual Property Rights Framework', 117.

Challenge of separation between AI-assisted and AI-generated: It is difficult to establish with certainty whether a work is AI-assisted or AI-generated as such determination is jurisdiction-dependent (territoriality of copyright) and specific to factual circumstances.[71]

> *"[The level of involvement of humans] can be hard to assess, and it is doubtful whether the substantiality test used in copyright—that is, assessing whether the original input (from a human being) is substantial enough to deserve copyright protection—will provide a straightforward answer at all times."[72]*

According to Senftleben and Buijtelaar, it is not possible to allocate rule-based and machine learning AI design choices leading to the work to the *programmer*, even if the programmer defines AI's goal, provides the AI with training data and reviews the generated outcome.[73]

Proposal for copyright assessment of AI outputs: The present study builds upon the following **four-step test** and the **three phases** of the creative process involving AI, as analytical tools for determining protection of AI outputs by copyright.[74]

The four interrelated criteria that AI output should meet to qualify as a copyright-protected "work" are as follows:
- a "production in the literary, scientific or artistic domain"; [75]
- the product of human intellectual effort; and
- the result of creative choices that are
- "expressed" in the output.

Each criterion will be explained in greater detail in the present Section.

The three *iterative* phases of the creative process in AI production:
- "conception" (design and specifications),
- "execution" (producing draft versions) and
- "redaction" (editing, finalisation).

Each phase will also be explained in greater detail in the present Section on the basis of case studies.

AI output satisfying the requirements of the four-step test is referred in the present study as AI-*assisted* output. AI-assisted output is protected as a work, since in that case "AI is used only as a tool to assist an author in the process of creation, the current IP framework remains applicable"[76]

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[71] Robert C. Denicola, 'Ex Machina: Copyright Protection for Computer-Generated Works', *Rutgers University Law Review* 69 (2016): 284-286 (referring to the distinction between AI-assisted and AI-generated outputs as "an obviously difficult, indeed indeterminate, and ultimately pointless endeavor. At the very least it demands a detailed inquiry into the nature of the interaction between the user and the computer and a sophisticated understanding of the functioning and capabilities of the software program.").

[72] Ramalho, 'Will Robots Rule the (Artistic) World?', 21–22.

[73] Martin Senftleben and Laurens Buijtelaar, 'Robot Creativity an Incentive-Based Neighbouring Rights Approach', *European Intellectual Property Review* 42, no. 12 (2020): 803.

[74] Hugenholtz et al., 'Trends and Developments in Artificial Intelligence: Challenges to the Intellectual Property Rights Framework', 77–84 and 116.

[75] "The scientific work is protected by copyright not because of the scientific character of its contents: a medical textbook, a treatise on physics, a documentary on interplanetary space are protected not because they deal with medicine, physics, or the surface of the moon, but because they are books and films. The content of the work is never a condition of protection. In speaking of a domain not only literary and artistic, but also scientific, the Convention encompasses scientific works which are protected by reason of the form they assume.", Claude Masouyé, *Guide to the Berne Convention for the Protection of Literary and Artistic Works (Paris Act, 1971)*, vol. 615(E), WIPO Publication (Geneva: WIPO, 1978), 12.

[76] European Parliament Resolution of 20 October 2020 on intellectual property rights for the development of artificial intelligence technologies (2020/2015(INI)), P9_TA(2020)0277, para. 14.

Case studies on a selection of different AI projects will examine the creative choices made by humans at each of the three phases of the creative process.			
	Phases of the creative process in AI production		
	Phase 1: Conception	Phase 2: Execution	Phase 3: Redaction
Creative choices "expressed" in the output			
Cases studies will help to empirically establish the (probability/frequency of) occurrence of scenarios of AI-generated output (i.e., non-qualified as a copyrighted work). The selection of cases includes those claiming AI-generated outcomes (e.g., "Mafia Love" by Benoît Carré).			

"Due to the "black box" nature of some AI systems – and certainly most of those relying on deep learning and neural networks – persons in charge of the conception phase will sometimes not be able to precisely predict or explain the outcome of the execution phase. This, however, need not present an obstacle to the "work" status of the final output, assuming that such output stays within the ambit of the person's general authorial intent."[77]

A different / compatible (to some extent) approach? It seems that the approach relying on analysis of the three phases of the AI creative process, as proposed in IViR 2020 study, assesses the *copyright status of AI output as a whole* (protected/not protected, without differentiating between parts of the output caused by human and by parts caused by AI).

This study will further develop this aspect to the extent possible. Gervais expressed against the distinction between AI-assisted and AI-generated works on the basis of the fact that courts in the US have been able to filter out public domain material reused to create new works.[78] Gervais proposed an "autonomy threshold" test consisting in establishing the "causation originality" for establishing whether an AI output is protected by copyright or in public domain.[79]

> "In application of the [originality causation] test […] and its implementation through the identification of creative choices, the task of a court would be to determine whether the choices that caused the apparent originality were embedded in (human-written) code in a way that the output was "caused" by the program, as in cases applying copyright protection to the output of audiovisual games. Choices too far removed from the code or the user's instructions, that is, those made autonomously by the machine, do not count toward copyright protection. This is the barrier that this Article terms the autonomy threshold."[80] According to this autonomy threshold test, if a work results from choices made by a human author and an AI, the AI output must be filtered out as public domain material.[81]

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[77] Hugenholtz et al., 'Trends and Developments in Artificial Intelligence: Challenges to the Intellectual Property Rights Framework', 117.

[78] Gervais, 'The Machine as Author', 2101 (footnote 252).

[79] Gervais, 2062, 2088, 2099, 2103 and 2106.

[80] Gervais, 2103.

[81] Gervais, 2100, 2101 and 2106; Ramalho, 'Will Robots Rule the (Artistic) World?', 19 and 22.

According to Mezei, "a significant amount of output might be generated by the machine with no causal connection between the original human programmer and the final output".[82] More generally on causation in the grant of copyright, see the work of Balganesh.[83]

We will explore whether and to what extent this *autonomy threshold approach* proposed by Gervais can contribute to interpret and apply the four-step text to AI output in the context of the iterative creative process under EU law.

3.2. Related rights

This section presents the conditions for grant of related rights for performances (3.2.1), production of phonograms (3.2.2) and broadcasting (3.2.3). The focus on these three "classic" related rights is motivated by their adoption across the EU and in the world as well as by their importance for economic operators. Attention is drawn to the relationship between copyright and related rights, in particular to the possibility of absence of copyright protection of AI outputs and availability of related rights, as well as to the possibility of accumulation by the same person of the status of different rightholders. The importance of the discussion on related rights is that it demonstrates large availability of legal protection for AI outputs not protected by copyright or where doubts about copyright protection exist.

3.2.1. Requirements for protection of performances

The **notion of "performance"** is a general notion offering some margin for its interpretation in light of technological developments and cultural practices. We will examine the limits of the notion drawing parallels with some borderline cases of minimum musical performances involving extensive use of computers (e.g., DJ performances). In this context, it seems possible to envisage AI-assisted musical outputs (emergence of "AI DJs", "AI auto-tune" singing or other forms of technology appropriation by artists).

At the same time, playing a song with a voice and intonation identical to a human performer would not qualify as a "performance" attracting protection by related rights. The same is true with playing notes of a song from the beginning to an end without any human intervention in the process.

> *"it is clear that [the performer] must "perform" and the words used in French in the [Rome] Convention might tend to exclude mere extras of theatre or cinema and those who assume a merely mechanical role (stagehands for example) since their part in the show bears no personal stamp and is marginal or secondary. It is a matter for the courts to interpret these terms. The words "act, sing, deliver, declaim, play in or otherwise perform" give them wide latitude."[84]*

In terms of the relation between copyright and related rights, the international treaties provide for a **connection between works and performances**.

Article 3(a) of the Rome Convention states that the notion of "performers" covers "actors, singers, musicians, dancers, and other persons who act, sing, deliver, declaim, play in, or otherwise **perform literary or artistic works**", and Article 2(a) of the WPPT provides that ""performers" are actors, singers, musicians, dancers, and other persons who act, sing, deliver, declaim, play in, interpret, or otherwise **perform literary or artistic works** or expressions of folklore".

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[82] Mezei, 'From Leonardo to the Next Rembrandt – The Need for AI-Pessimism in the Age of Algorithms', 392.
[83] Shyamkrishna Balganesh, 'Causing Copyright', *Columbia Law Review* 117, no. 1 (2017): 1–78.
[84] Claude Masouyé, *Guide to the Rome Convention and the Phonograms Convention*, vol. 617(E), WIPO Publication (WIPO, 1981), 22.

For example, "AI-made synthetisation generates digital sound and look-alike, and falls outside the scope of protection conferred to performances by the [UK copyright] Act" because the law protects only reproduction of recorded performances.[85] French law also links protection of performances to the performance of works.[86]

Yet, the relation between works and performances is a conventional minimum and the contracting parties are free to apply protection to performers also performing other type of content than works. See, in this respect, Article 9 of the Rome Convention:

> *"Any Contracting State may, by its domestic laws and regulations, extend the protection provided for in this Convention to artists who do not perform literary or artistic works."*

In other words, this gives contracting states margin of discretion under their international obligations to recognize copyright protection to performances of AI-generated output.

Under EU law, both the Rental and Lending Rights Directive (art. 3(1)(b)) and the InfoSoc Directive (arts. 2(b) and 3(2)(a)) recognize protection for performers of fixations of their performances. Neither directive explicitly links the concept of performance to the performance of works, although both instruments make explicit reference to the Rome Convention, in the case of the Rental and Lending Rights Directive[87], or the WPPT, in the case of the InfoSoc Directive that implements that instrument into EU law.[88]

3.2.2. Requirements for protection of phonograms

Recording of performances and other sounds, regardless of whether performed content is a work and/or is protected by copyright or related rights, qualifies for protection under related rights of phonogram producers. There is no threshold for protection.[89]

Non-fixed (unrecorded) performance of a sound is not protected by the producer's related rights (e.g., live public performance, broadcasted unrecorded performance).

According to Article 3(b) of the Rome Convention: ""phonogram" means any exclusively aural fixation of sounds of a performance or of other sounds". Article 2(b) of the WPPT states that ""phonogram" means the fixation of the sounds of a performance or of other sounds, or of a representation of sounds, other than in the form of a fixation incorporated in a cinematographic or other audiovisual work". "the fixation may be of sounds of a performance or of other sounds. During the Rome Conference, bird-song and natural noises were given as examples of the latter. In other words, whatever the origin of the sound, the phonogram as such is protected by the Convention."[90]

Under EU law, both the Rental and Lending Rights Directive (art. 3(1)(c)) and the InfoSoc Directive (arts. 2(c) and 3(2)(b)) recognize protection for the phonogram producer in respect of his phonograms.

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[85] Mathilde Pavis, 'Artificial Intelligence and Performers' Rights', Submission to the UK IPO (Submission on behalf of The Centre for Science, Culture and the Law at the University of Exe, 30 November 2020), 2, https://doi.org/10.5281/zenodo.4298855.

[86] Bensamoun, Farchy, and Schira, 'Mission Intelligence Artificielle et Culture', 45 and 48.

[87] Recital 15 R&LRs Directive.

[88] See Recital 15 InfoSoc Directive.

[89] P. Bernt Hugenholtz, 'Neighbouring Rights Are Obsolete', *International Review of Intellectual Property and Competition Law* 50, no. 8 (2019): 1006–11.

[90] Masouyé, *Guide to the Rome Convention and the Phonograms Convention*, 617(E):22.

In this section, our focus is on whether AI musical outputs in the form of phonograms are protected under EU law.

This section concludes with case studies confirming fixation of sounds by some AI musical services.

3.2.3. Requirements for protection of broadcasts

In this section we will discuss the protection of non-copyrighted output, non-recorded performances and other sounds, with a focus on webcasting. There is no international norm requiring protection of webcasting.[91]

Under Article 3(f) of the Rome Convention: ""broadcasting" means the transmission by wireless means for public reception of sounds or of images and sounds."

Under Article 2(f) of the WPPT: ""broadcasting" means the transmission by wireless means for public reception of sounds or of images and sounds or of the representations thereof".

Articles 2(e) and 3(2)(d) of the InfoSoc Directive provide broadcasting organisations with the exclusive rights to authorise or prohibit reproduction and making available of fixations of their broadcasts, whether these broadcasts are transmitted by wire or over the air, including by cable and satellite. Articles 8(3) and 9(1)(d) of the Rental and Lending Directive provide broadcasters with the exclusive rights to authorise or prohibit the rebroadcasting of their broadcasts by wireless means, the communication to the public of their broadcasts if such communication is made in places accessible to the public against payment of an entrance fee, as well as the making available to the public, by sale or otherwise fixations of their broadcasts.

According to the European Commission, the act of "broadcasting by wireless means or for any communication to the public" covered by the right to a single equitable remuneration, under Article 8(2) of the Rental and Lending Directive, includes "webcasting, internet radio and simulcasting or near-on-demand services received either on a personal computer or on a mobile telephone".[92]

In some Member States, "webcasting" is considered to be a type of "broadcasting" (e.g. in Croatia, the Czech Republic and the Netherlands), while in some others it falls under the broader term of "communication to the public" (e.g., in Hungary, Spain and Sweden).[93]

In this section, our focus is on whether AI musical outputs in the form of broadcasts are protected under EU law.

3.3. Sui generis rights: The case of computer-generated works

This section will explore the notion of computer-generated works as a possible legal regime for protection of AI outputs.

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[91] P Bernt Hugenholtz, 'The WIPO Broadcasting Treaty. A Conceptual Conundrum' 41, no. 4 (2019): 199–202.

[92] 'Commission Recommendation of 18 October 2005 on Collective Cross-Border Management of Copyright and Related Rights for Legitimate Online Music Services (2005/737/EC); Corrigendum in OJ 2005 L 284/10' (n.d.), para. 1(f)(ii).

[93] AEPO-ARTIS, 'Performers' Rights in International and European Legislation: Situation and Elements for Improvement', 2018, 22.

This notion is not contained in EU legislation but is provided by the law of Ireland, one of its Member States. The notion of "computer-generated works" was first introduced in the UK, former EU Member State, before being adopted in other common law countries.

- Ireland (Section 21(f), Copyright and Related Rights Act (2000), No. 28/2000),[94] [95]
- UK (Sections 9(3), 12(7) and 178 of the CDPA),[96]
- Hong Kong SAR (Section 11(3), Copyright Ordinance (1998) Cap. 528),
- India (Section 2(d)(vi), Copyright Amendment Act (2012), No. 27),
- New Zealand (Section 5(2)(a), Copyright Act (1997), and
- South Africa (Section 1, Copyright Act (1978)[97].[98] [99] [100] [101]

The study examines respective statutory provisions and case law of these countries only to the extent that they help to understand the regime of computer-generated works. Preliminary research permitted to identify cases on computer-generated works only in the UK and South Africa.

The brief reference to these legal regimes, focusing on those in Europe, serves to ask the question of whether the "computer-generated work" approach provides for the sought-after legal certainty through the statutory text or settled case-law?

- Our tentative response is that it does not. On the one hand, the legal qualification of a computer-generated work and a work under EU law is controversial. On the other hand, these types of regimes appear to not adequately address the issue of identifying the person that undertook all the "arrangements necessary for the creation of the work".

For criticism of the approach, see: Bently et al.[102], Bently[103], Dickenson et al.[104], Lambert[105], and Lauber-Ronsberg and Hetmank.[106]

On this topic, it is worth mentioning a recent development. In 2021, The UK IPO concluded its consultations on AI and IP by marking in the "Next steps – actions":

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[94] Paul Lambert, 'Computer-Generated Works and Copyright: Selfies, Traps, Robots, AI and Machine Learning', *European Intellectual Property Review* 39, no. 1 (2017): 12–20.

[95] Julia Dickenson, Alex Morgan, and Birgit Clark, 'Creative Machines: Ownership of Copyright in Content Created by Artificial Intelligence Applications', *European Intellectual Property Review* 39, no. 8 (2017): 457–60.

[96] Nova Productions Ltd v Mazooma Games Ltd & Ors Rev 1 [2006] EWHC 24 (Ch) (20 January 2006) (n.d.).

[97] Payen Components South Africa Ltd. v Bovic Gaskets CC and Others (448/93) [1995] ZASCA 57; 1995 (4) SA 441 (AD); [1995] 2 All SA 600 (A) (25 May 1995) (n.d.).

[98] Andres Guadamuz, 'Artificial Intelligence and Copyright', *WIPO Magazine* 5 (2017): 18; Andres Guadamuz, 'Do Androids Dream of Electric Copyright? Comparative Analysis of Originality in Artificial Intelligen.Pdf', *Intellectual Property Quarterly* 2 (2017): 169–86.

[99] Jani McCutcheon, 'The Vanishing Author in Computer-Generated Works: A Critical Analysis of Recent Australian Case Law', *Melbourne University Law Review* 36, no. 3 (2013): 915–69.

[100] Niloufer Selvadurai and Rita Matulionyte, 'Reconsidering Creativity: Copyright Protection for Works Generated Using Artificial Intelligence', *Journal of Intellectual Property Law & Practice* 15, no. 7 (2020): 536–43, https://doi.org/10.1093/jiplp/jpaa062.

[101] Lionel Bently, 'The UK's Provisions on Computer-Generated Works: A Solution for AI Creations?' (Conference of the European Copyright Society (ECS): EU copyright, quo vadis? From the EU copyright package to the challenges of Artificial Intelligence, Brussels, 25 May 2018), https://europeancopyrightsocietydotorg.files.wordpress.com/2018/06/lionel-the-uk-provisions-on-computer-generated-works.pdf.

[102] Lionel Bently et al., *Intellectual Property Law*, 5th ed. (New York, NY: Oxford University Press, 2018).

[103] Bently, 'The UK's Provisions on Computer-Generated Works: A Solution for AI Creations?'

[104] Dickenson, Morgan, and Clark, 'Creative Machines: Ownership of Copyright in Content Created by Artificial Intelligence Applications'.

[105] Lambert, 'Computer-Generated Works and Copyright: Selfies, Traps, Robots, AI and Machine Learning'.

[106] Anne Lauber-Rönsberg and Sven Hetmank, 'The Concept of Authorship and Inventorship under Pressure: Does Artificial Intelligence Shift Paradigms?', *Journal of Intellectual Property Law & Practice* 14, no. 7 (2019): 570–79, https://doi.org/10.1093/jiplp/jpz061.

> *"Consult on whether to limit copyright in original works to human creations (including AI-assisted creations). In tandem with this, consult on whether or not to replace the existing protection for computer-generated works with a related right, with scope and duration reflecting investment in such works. Also consider whether action should be taken to reduce confusion between human and AI works, and the risk of false-attribution."*[107]

Past rejection of the notion in EU law: Presentation of the considerations and reasons for rejection of the notion "computer generated works" in the initial proposal for the Computer Programs Directive.[108] This notion was introduced in the European Commission's Proposal after the notion of "computer-generated works" was adopted in the CDPA in 1988 in the UK. It "was judged to be somewhat premature" and the European Parliament voted to delete the provision.[109] The notion of "computer-generated works" inspired by the UK law was also used in the WIPO Draft Model Law on Copyright.

Legal nature of the rights: It was previously found that "these regimes [of computer-generated works] are perhaps better understood or qualified as a species of related rights, in which case they would be compatible with the EU *acquis*."[110] The present study undertakes a legal qualification of regimes of "computer-generated works" as related rights or copyright in the sense of EU *acquis*. This legal qualification is important not only for the assessment of the regime's compatibility with EU law but also for application of rules on national treatment / reciprocity.

With regard to computer-generated works, the case studies will inquire:
- whether any of the AI projects claims / denies protection of outputs under "computer-generated works" regime. Some projects are/were London-based (e.g., Jukedeck); some projects are based in continental Europe (AIVA) – to ask about their reasoning as well;
- about AI projects / users' opinion / preference for "computer-generated works" approach, status quo or change;
- whether CMOs / rightholders / users manage to distinguish "computer-generated works" and other works? If yes, then how?
- whether CMOs / rightholders treat computer-generated works as phonograms (protected by related rights) or works (protected by authors rights) and whether they have registered any output under this type of protection.

3.4. Interim conclusions on protection of AI musical output by copyright and related rights

Lack of human intervention/contribution in the sense of the originality requirement leads to failure to qualify as an authorial work under EU law. The authorless AI-generated output is – for copyright purposes – in the public domain, therefore.

It was previously found that:

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[107] UK IPO, 'Executive Summary, Consultation on Artificial Intelligence and Intellectual Property', 23 March 2021, para. 6, https://www.gov.uk/government/consultations/artificial-intelligence-and-intellectual-property-call-for-views/executive-summary.

[108] 'European Commission, Explanatory Memorandum to the Proposal for a Council Directive on the Legal Protection of Computer Programs COM(88) 816 Final — SYN 183 (Submitted by the Commission on 5 January 1989) (89/C 91/05)' (n.d.).

[109] Thomas Dreier, 'The Council Directive of 14 May 1991 on the Legal Protection of Computer Programs', *European Intellectual Property Review* 13, no. 9 (1991): 321.

[110] Hugenholtz et al., 'Trends and Developments in Artificial Intelligence: Challenges to the Intellectual Property Rights Framework', 117.

> *""Authorless" AI outputs will remain completely unprotected only in cases where no related right or sui generis right is available. Since such rights attach primarily to aural and audio-visual signals, as well as to databases, such cases are most likely to occur if the AI-assisted output is in alphanumerical form (letters and numbers)."[111]*

The present study attempts to further develop on the analytical tool (on the basis of the four-step test and three phases of the creative process) for determining copyright protection of AI output.

Through legal analysis and case studies, the study shall estimate the existing uncertainties for qualifying AI outputs as protected / unprotected (neither by copyright nor by related rights). This analysis is of relevance for any recommendations for changes to the existing legal framework.

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[111] Hugenholtz et al., 118.

4. Authorship and initial ownership of copyright and related rights on AI outputs

This chapter examines the attribution of authorship and ownership to different (natural and legal) persons involved in production and dissemination of AI outputs. The previous chapter answers the question: Whether and to what extent AI (musical) outputs are protected by copyright and/or related rights in EU law? The present Chapter answers the question: What (legal or natural) persons involved in the production of an AI (musical) output qualify as authors and/or owners?

The legal doctrinal analysis is combined with case studies illustrating decisions on authorship and ownership attribution taken by market actors.

On the basis of the state-of-the-art review, IViR 2020 study observed that:

> *"An important trend that does emerge from the state of the art review is that more and more AI capability is being offered "as a service" rather than as "bespoke" (tailored) AI systems. Consequently, the emphasis of our analysis is on the users (operators) of AI systems, rather than on their developers."[112]*

The present chapter will further articulate the notions of **"developers"** and **"users"**, commonly used in the legal scholarship for discussing authorship and/or ownership of AI outputs.

Our preliminary review of some AI music projects showed that providers of some "AI as a Service" solutions do not offer internet users full control over creative choices, and that some input choices are made by the providers.

Our preliminary review of cases selected for the case study demonstrated that companies developing AI and providing AI service claim rights over the output. The same approach is taken by at least some musicians "users" of AI services.

The IViR 2020 study found that:

> *"In most cases, the user – not the developer – of the AI system will be deemed the owner of the related right, since it is the user that triggers the acts that give rise to these rights by activating the AI system."[113]*

and that:

> *"Authorship status will be accorded to the person or persons that have creatively contributed to the output. In most cases, this will be the user of the AI system, not the AI system developer, unless the developer and user collaborate on a specific AI production, in which case there will be co-authorship. If "off-the-shelf" AI systems are used to create content, co-authorship claims by AI developers will also be unlikely for commercial reasons, since AI developers will normally not want to burden customers with downstream copyright claims. We therefore expect these arrangements to be clarified in the contractual terms of service of providers of such systems."[114]*

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[112] Hugenholtz et al., 116.
[113] Hugenholtz et al., 117.
[114] Hugenholtz et al., 117.

Our case study will further serve to confront the practices and claims of market actors (having intimate knowledge about factual circumstances of the creative process) with the legal analysis.

4.1. Copyright: Authorship in general

Attribution of authorship is a matter of law. In theory, attribution of authorship in AI- outputs could follow one of the next **three general scenarios**:

- AI user as author;
- AI developer as author; or
- AI user and developer as joint authors;
- The outer border of these scenarios is the case of AI-generated output, which is authorless.[115]

At the same time, **attribution of authorship** to different persons involved in AI creative process **is fact-dependent** and the actors involved in specific projects are well-positioned to make appropriate qualifications.

Case studies will be used to inquire about:
- the current practice of attribution of authorship in different AI projects;
- the reasons behind this practice;
- the impact on the qualification of persons with different qualifications as music authors.

For example, there is a distinction between composers and lyricists (preliminary analysis demonstrates that AI is much more used for generating compositions than songs). It seems that use of AI has higher impact on the authorship in the domain of compositions. Use of AI has a potential to expand the authorship in musical domains to AI specialists. A national example of the status of sound engineers in Czechia could be of some interest as a useful parallel. AI helps non-musically-savvy persons to create music. Feedback loop in the AI tools offering people more option than one button click.

Based on the legal analysis, technology overview and cases studies, the study aims to better define and operationalise the **notions of "developer" and "user"**. These are seen more as functional roles, rather than persons (e.g., an IP specialist when also using AI for creation of output becomes a "user"). These notions will be contrasted with the notions of developers and users in computer games discussions.

Some legal uncertainty regarding ownership of rights is solved by **contracts** between parties involved in creation of AI outputs (e.g., contracts between providers of AI services and users). In such important jurisdiction for AI outputs as the US, the doctrine of work-made-for-hire (employer as an author) regulates attribution of authorship and ownership in employee-employer relations.[116]

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[115] Jane C. Ginsburg and Luke Ali Budiardjo, 'Authors and Machines', *Berkeley Technology Law Journal* 34, no. 2 (2018): 343–456.

[116] Shlomit Yanisky-Ravid and Luis Antonio Velez-Hernandez, 'Copyrightability of Artworks Produced by Creative Robots and Originality: The Formality-Objective Model', *Minnesota Journal of Law, Science & Technology* 19, no. 1 (2018): 1–53; Kalin Hristov, 'Artificial Intelligence and the Copyright Dilemma', *IDEA* 57, no. 3 (2017): 431–54; Annemarie Bridy, 'Coding Creativity: Copyright and the Artificially Intelligent Author', *Stanford Technology Law Review* 5 (2012): 1–28; Russ Pearlman, 'Recognizing Artificial Intelligence (AI) as Authors and Inventors Under U.S. Intellectual Property Law', *Richmond Journal of Law & Technology* 24, no. 2 (2018): i–38.

Case studies on a selection of different AI projects will examine who makes the creative choices (e.g., developers / users) at each of the three phases of the creative process and how the authorship is attributed.

	Phases of the creative process in AI production		
	Phase 1: Conception	Phase 2: Execution	Phase 3: Redaction
Developer			
User			

We envision a case study illustrating and examining reasons and consequences of:
• Different copyright roles ((co)author/non-author) attributed to persons performing the same roles in different AI projects.
• The same copyright roles ((co)author/non-author) attributed to persons performing different roles in different AI projects.

4.2. Copyright: Authorship of derivative works

Although the focus of the study is on AI outputs, the issue of derivative works seems to be sufficiently relevant for the discussion on authorship/ownership over the outputs. The works would be derivative from the works used in input datasets.

At the outset, it is important to mention that EU law does not contain a harmonised right of adaptation or the notion of "derivative work". [117]

With relevance for this topic, the European Parliament suggested to make copyright protection of AI output conditional on lawful use of copyrighted content in the input:

> *"if it is considered that [AI-generated] works could be eligible for copyright protection; recommends that ownership of rights, if any, should only be assigned to natural or legal persons that created the work lawfully and only if authorisation has been granted by the copyright holder if copyright-protected material is being used, unless copyright exceptions or limitations apply"[118]*

and

> *"Notes, with regard to the use of non-personal data by AI technologies, that the lawful use of copyrighted works and other subject matter and associated data, including pre-existing content, high-quality datasets and metadata, needs to be assessed in the light of the existing rules on limitations and exceptions to copyright protection, such as the text and data mining exception, as provided for by the Directive on copyright and related rights in the Digital Single Market"[119]*

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[117] Thomas Margoni, 'Artificial Intelligence, Machine Learning and EU Copyright Law: Who Owns AI?' (2018), http://dx.doi.org/10.2139/ssrn.3299523; Thomas Margoni, 'The Digitisation of Cultural Heritage: Originality, Derivative Works and (Non) Original Photographs' (2014), http://dx.doi.org/10.2139/ssrn.2573104; Thomas Margoni, 'The Harmonisation of EU Copyright Law: The Originality Standard' (2016), http://dx.doi.org/10.2139/ssrn.2802327.

[118] European Parliament Resolution of 20 October 2020 on intellectual property rights for the development of artificial intelligence technologies (2020/2015(INI)), P9_TA(2020)0277, para. 15.

[119] European Parliament Resolution of 20 October 2020 on intellectual property rights for the development of artificial intelligence technologies (2020/2015(INI)), P9_TA(2020)0277, para. 17.

Naturally, for an AI output to be a derivative work the pre-existing data-content that is used must qualify as a "work".

As noted by Iglesias et al,

> *"In cases where individual works or subject-matter are not per se reproduced (i.e. where only information about those is included), one could in principle conclude that the final results should not be considered as a derivative."*[120]

There is therefore a key legal technical question to address from the outset, which relates to how protected content is used as input and during the optimisation process, and how the legal qualification of those activities affects the output for purposes of it being considered a derivative work or adaptations.

There has already been some analysis of this topic under US law. Under US law, a work is derivative when the creator "takes the creative choices that made the primary work original".[121] As noted by Gervais

> *"In a deep learning context, the computer does not derive in that sense; instead it finds correlations and patterns to use as a matrix for its own production. These productions are not, therefore derivative works."*[122]

We will also compare status of derivative works with that of phonograms.

Case study: focus on contracts (terms of use) between AI services and users. Whether such contracts provide users with a guarantee of output being free of third-party rights.

4.3.   Related rights: Performers

The concept of performer and performance in discussed above at [3.2.1].
This section will focus on a case study establishing whether performance rights were attributed to anybody, with an emphasis on performance of AI outputs (see case studies on concerts by symphonic orchestras performing AI compositions).

4.4.   Related rights: Phonogram producers

Article 3(c) of the Rome Convention states that ""producer of phonograms" means the person who, or the legal entity which, first fixes the sounds of a performance or other sounds". Article 2(d) of the WPPT affirms that ""producer of a phonogram" means the person, or the legal entity, who or which takes the initiative and has the responsibility for the first fixation of the sounds of a performance or other sounds, or the representations of sounds" When an employee fixes the sound of a recording in the course of his employment, it is the legal entity undertaking the production of phonograms that is designated as "phonogram producer".[123]

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[120] Iglesias, Shamuilia, and Anderberg, *Intellectual Property and Artificial Intelligence*, EUR 30017 EN:9.
[121] Daniel Gervais, 'The Derivative Right, or Why Copyright Law Protects Foxes Better than Hedgehogs', *Vanderbilt Journal of Entertainment and Technology Law* 15, no. 4 (2013): 808.
[122] Gervais, 'The Machine as Author', 2097.
[123] Masouyé, *Guide to the Rome Convention and the Phonograms Convention*, 617(E):23.

Case study of AI services offering downloading of recording files with a music created with AI. Attention to the rights claimed by the company providing such files (distinction between copyright and related rights).

4.5.   Related Rights Broadcasting Organisations

Brief explanation of international and EU law, with link to section 3.2.3. above.
Case study demonstrating how rights were claimed in this context.

4.6.   Interim conclusions on attribution of authorship and ownership

Based on the case studies, the study will indicate existence or emergence of a practice or common decisions on attribution of authorship and ownership among market actors.

5. Exercise of rights in relation to AI outputs

This Chapter will provide an overview of the issues associated with RMI, contracts and collective licensing *as they relate to AI outputs*. It is not meant to be exhaustive and does not reflect empirical research beyond the information collected through case studies, including interviews.

5.1. Rights management information

Information about rightholders, works, project subject-matter and other **rights management information** is essential for integration of AI outputs into the traditional channels of commerce of copyright-intensive industries. In spite of the fact that copyright and related rights are not subject to mandatory registration, basic rights management information is necessary for the effective exercise of rights.

IViR 2020 study recommended (p. 118): "Further research into the risks of false authorship attributions by publishers of "work-like" but "authorless" AI productions, seen in the light of the general authorship presumption in art. 5 of the Enforcement Direc-tive, should be considered." In this respect, requirement No. 4 "Transparency" of the Assessment List for Trustworthy AI (ALTAI) developed by the High-Level Expert Group on Artificial Intelligence (AI HLEG), set up by the European Commission[124] should facilitate qualification of output as AI-assisted or AI-generated. We will explore in our analysis whether that is the case.

Rights management information (RMI) is also of **high legal significance**.
- Presumption of authorship/ownership is provided for by Article 15(1) of the Berne Convention ("If an alleged infringer wishes to show that the author is not the copyright owner, he must prove it."[125]) and Article 5 of the Enforcement Directive (applying *mutatis mutandis* to the holders of related rights).
- Communication of authorship/ownership information to third parties and public in general, requires persons involved in AI creative process to make respective decisions.
- Preliminary review of some AI cases demonstrated presence of contradictory public statements as to the authorship/ownership over AI outputs. While some public statements about AI-generated are of marketing nature (e.g., laudatory statements aiming at drawing media attention), others might result from the difficulty of the existing institutional practices to accommodate AI-generated outputs.
- This section will inquire about legal significance of contradictory statements and of statements of AI outputs being in a public domain (AI-generated outputs).

Lack of RMI
- absence of information and legal protection;
- anonymous works issue (Article 15(3) of the Berne Convention: "In the case of anonymous and pseudonymous works, other than those referred to in paragraph (1) above, the publisher whose name appears on the work shall, in the absence of proof to the contrary, be deemed to represent the author, and in this capacity he shall be entitled to protect and enforce the author's rights.");
- special regimes for exercise of works with lack of RMI: "orphan works" and "non-distributable amounts."

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[124] High-Level Expert Group on AI set up by the European Commission, 'The Assessment List for Trustworthy Artificial Intelligence (ALTAI) for Self Assessment' (Publications Office, 17 July 2020), 7–8, https://data.europa.eu/doi/10.2759/002360.

[125] Masouyé, *Guide to the Berne Convention for the Protection of Literary and Artistic Works (Paris Act, 1971)*, 615(E):93.

This study will also investigate the **accuracy of RMI**. It was found that "Further research into the risks of false authorship attributions by publishers of "work-like" but "authorless" AI productions, seen in the light of the general authorship presumption in art. 5 of the Enforcement Directive, should be considered."[126]

In general, uncertainties related to the protection of AI outputs by copyright and attribution of authorship are the main reasons for the present research undertaken. On such difficulties[127] Hence, it seems fair to assume that persons involved in AI projects and having genuinely honest intentions might have difficulties making accurate errorless legal qualifications. Still, AI outputs amplify the issue of wilful false statement (indication of authors when there is none (AI-generated works) / non-indication of authors where there are some (AI-assisted works)). [128]. In principle, the international and EU framework does not create obstacles for imposition of transparency obligations regarding AI-generated processes creating outputs like those protected by copyright.

The existing capacity of the copyright data management infrastructure is not designed to deal with the quantity of works and other subject matter at the scale that can be generated by AI systems. Traceability of uses of protected subject matters requires generation of unique identifiers for various constitutive elements (e.g., CAE/IPI, ISWC, ISRC) and adding them to different databases. This process implies costs. Today's copyright infrastructure was not designed for the big numbers of AI output. Do or could the organisations managing the copyright infrastructure play to some extent a role of gatekeepers limiting the influx of AI-generated output into some traditional channels of commerce in the musical markets?

[*Under consideration*] Case study asking CMOs about readiness of the copyright infrastructure and about issue of costs for registering and managing data to big numbers of AI output (e.g., SACEM has in its repertoire only a few of AIVA's huge number of works).

5.2.   Individual contracts and AI output

In line with the recommendation of the IViR 2020 study,[129] the present inquiry looks into the use of contracts, including terms of use, for regulating use of AI outputs. Market operators use contractual arrangements for achieving, among other things, legal certainty about allocation of ownership.[130]

5.3.   Collective Licensing and AI musical Output

Across Europe, collective management of copyright and related rights is a common way for exercising rights for secondary uses of works and other subject matter. Rights to works and subject matter of CMOs are licensed under the same conditions, and there is no price competition between AI-assisted

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[126] Hugenholtz et al., 'Trends and Developments in Artificial Intelligence: Challenges to the Intellectual Property Rights Framework', 118.

[127] On such challenges, see Benoît Michaux, 'Singularité technologique, singularité humaine et droit d'auteur', in *Law, norms and freedoms in cyberspace / Droit, normes et libertés dans le cybermonde : Liber Amicorum Yves Poullet*, ed. Yves Poullet et al. (Larcier, 2018), 401–16.

[128] On the issues of mandatory/voluntary disclosure, see Lauber-Rönsberg and Hetmank, 'The Concept of Authorship and Inventorship under Pressure'.

[129] Hugenholtz et al., 'Trends and Developments in Artificial Intelligence: Challenges to the Intellectual Property Rights Framework', 118.

[130] Pratap Devarapalli, 'Machine Learning to Machine Owning: Redefining the Copyright Ownership from the Perspective of Australian, US, UK and EU Law', *European Intellectual Property Review* 40, no. 11 (2018): 722–28.

outputs and other protected content. The same is true in the case of collective exercise of statutory rights to remuneration.

It was argued by some experts that companies might not have an interest in disclosing that musical outputs are AI-generated, because they would not be able to benefit from copyright protection.[131] Yet, it seems that there is some space for business models relying on content free of copyright protection. For example, some music services tried to combine Creative Commons non-commercial licences with commercial licensing (CC+ business models) in order to bypass statutory rules on equitable remuneration and mandatory collective management of rights.[132] If AI-generated non-recorded musical outputs are webcasted and used for creating musical background in restaurants, bars, supermarkets, etc., then no remuneration is due for equitable remuneration for communication to the public of commercial phonograms, because there are no phonograms in a legal sense. In a majority of Member States, a single equitable remuneration for broadcasting and communication to the public of commercial phonograms is due for webcasting, e.g., Austria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden.[133]

AI-generated recorded musical output without performances might raise questions on the application of traditional statutory and CMOs' corporate rules on the distribution of collections between performers and phonogram producers (e.g., such statutory rules are uncommon regarding rights to equitable remuneration for communication to the public of commercial phonograms). Would performers' share be "lost", or would there be interest to designate performers where there is none? The answer might depend on the design of the particular system.

This section closes with a case study of CMO's registration of AI outputs (e.g., by SACEM of AIVA's creations)

5.4. Use of foreign AI output

The IViR 2020 study concluded that:

> *"The absence of (fully) harmonised rules of authorship and copyright ownership*
> *has led to divergent solutions in national law of distinct Member States in respect*
> *of AI-assisted works, which might justify a harmonisation initiative."[134]*

Indeed, depending on the qualification of different national approaches to the protection of AI outputs by copyright, related rights and/or sui generis regimes different conclusions can be drawn on the protection of foreign AI outputs.

In this context, we will also reflect on the national treatment and reciprocity rules elicited by the recent CJEU judgment in *Recorded Artists Actors Performers*, C-265/19, ECLI:EU:C:2020:677.

Special attention will be paid to the issue of protection of foreign AI-generated outputs that are in the public domain abroad, and non-protection of foreign AI-assisted outputs that are protected abroad.

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[131] Bensamoun, Farchy, and Schira, 'Mission Intelligence Artificielle et Culture', 47.

[132] Oleksandr Bulayenko, 'MusicMatic – The French Supreme Court's Decision on Creative Commons Plus (CC+) Commercial Licensing and Mandatory Collective Management of the Right to Remuneration for Communication to the Public of Commercial Phonograms', *International Review of Intellectual Property and Competition Law* 51, no. 5 (2020): 668–79, https://doi.org/10.1007/s40319-020-00948-5.

[133] AEPO-ARTIS, 'Performers' Rights in International and European Legislation: Situation and Elements for Improvement', 23.

[134] Hugenholtz et al., 'Trends and Developments in Artificial Intelligence: Challenges to the Intellectual Property Rights Framework', 118.

Different approaches to the attribution of authorship and ownership can also have an impact of the international transfer of music royalties in relation to AI outputs.

6. Interpretative and regulatory proposals

This Chapter will map out and review interpretative proposals to solve the problems identified in our previous analysis and develop/advance additional proposals of our own.

There is a great diversity of views among experts on the protection of AI output. For example, according to the answers to a survey by 57 experts in technology policy, IP, public policy/administration, economics and software, they preferred that human creators are designated as the sole "authors" of the outputs independently generated by computer programs (instead of designating computer programs also or computer programs jointly with humans).[135]

Below is a summary list of different proposals or proposed actions to deal with the questions surrounding the legal status of AI outputs. In the final report we will categorise them thematically in a rigorous manner.

- **At the EU institutional level:**
  - The EP's JURI Committee called for "the elaboration of criteria for "own intellectual creation" for copyrightable works produced by computers or robots".[136]
  - The 2020 EP Resolution "calls on the Commission to support a horizontal, evidence-based and technologically neutral approach to common, uniform copyright provisions applicable to AI-generated works in the Union, if it is considered that such works could be eligible for copyright protection" and (legality of works / derivative works) "recommends that ownership of rights, if any, should only be assigned to natural or legal persons that created the work lawfully and only if authorisation has been granted by the copyright holder if copyright-protected material is being used, unless copyright exceptions or limitations apply;"[137] Previously, the European Parliament already called for "technologically neutral approach to intellectual property".[138]

- **Wait-and-see approach + gather more evidence:**
  - The French CLSP Report calls for caution, and suggests to do nothing for now, and instead obtain more empirical evidence.[139]
  - To some extent, this is also the suggestion for the IViR Study 2020 regarding fundamental changes to the EU *acquis.*

- **Public domain:**
  - Perry & Margoni suggest keeping such outputs (or some of them) in the public domain[140]; Samuelson;[141] See similarly Daniel Schönberger .[142];

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[135] Hristov, 'Artificial Intelligence and the Copyright Survey', 11–16.

[136] 'Committee on Legal Affairs of the European Parliament, Explanatory Statement to the Report with Recommendations to the Commission on Civil Law Rules on Robotics (2015/2103(INL)), 27 January 2017, A8-0005/2017' (n.d.), 28.

[137] European Parliament Resolution of 20 October 2020 on intellectual property rights for the development of artificial intelligence technologies (2020/2015(INI)), P9_TA(2020)0277, para. 15.

[138] 'European Parliament Resolution of 16 February 2017.Pdf', n.d., para. 18.

[139] Bensamoun, Farchy, and Schira, 'Mission Intelligence Artificielle et Culture', 48; Mezei, 'From Leonardo to the Next Rembrandt – The Need for AI-Pessimism in the Age of Algorithms', 412–13.

[140] Perry and Margoni, 'From Music Tracks to Google Maps: Who Owns Computer Generated Works?'

[141] Pamela Samuelson, 'Allocating Ownership Rights in Computer-Generated Works', in *Symposium Cosponsored by University of Pittsburgh Law Review and The Software En on The Future of Software Protection*, ed. Andrew Ruymann (University of Pittsburgh Press, 1986), 1185–1228.

[142] Daniel Schönberger, 'Deep Copyright: Up - And Downstream Questions Related to Artificial Intelligence (AI) and Machine Learning (ML)', in *Droit d'auteur 4.0 / Copyright 4.0*, ed. Jacques de Werra (Journée de droit de la propriété intellectuelle, Université de Genève and Schulthess, 2018), 145–73.

- **Adjustments within the existing copyright system:**
  - changes to the notions of (or their interpretation) "creation", "originality", "author", extent of moral rights). Use of the copyright system as a backbone structure permits to rely on the existing legal understandings of some notions and to use the international system built on national treatment.
  - Enser develops a proposal for a regime inspired by the treatment of posthumous works.[143]
  - Gervais suggested "to avoid modifying the threshold by dissecting the exact nature of creativity. Instead, this Article suggests looking at the *causation* of the choices to see if they are creative under Feist Publ'ns, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340, 346 (1991)"

- **Some proposals call for the amendment of some elements of the existing system of related rights, focusing on explicit investment or other threshold for protection.**[144]
  - Senftleben & Buijtelaar call for recognition of AI-outputs as being in the public domain and introduction of "tailor-made related rights" of shorter term of protection and of non-exclusive nature ("right to equitable remuneration") for users of AI systems.[145]
  - Ramalho argues for the recognition of AI output as being in the public domain and introduction of rights for "disseminators" of AI outputs, similar to that provided? to publishers of previously unpublished works under Art. 4 of the Rental and Lending Directive;[146]

- **Extending the "computer-generated works" approach to AI outputs**:
  - Denicola supported "computer-generated works" approach on the grounds that it permits to avoid the identification of the author in the AI-assisted / AI-generated output dichotomy by recognising the user who initiates the creation of computer-generated work as the author and rightholder.[147]

- **Many authors and stakeholders advance proposals for special rights or sui generis rights for AI-assisted outputs:**
  - Arguably Ramalho fits here too.
  - SACEM submission to the CSPLA study[148]: AI-generated output deserves protection by IP rights, and it is necessary to designate who is responsible for the use of these rights.) – (But see for criticism of neighbouring and sui generis rights approach: Mezei[149])
  - Different authors, such as Ciani[150], Noto La Diega[151], de Lauber-Rönsberg and Hetmank[152], and de Cock Buning [153]
  - McCutcheon calls for a sui generis regime not requiring an author, authorship or originality;[154]

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[143] Perry and Margoni, 'From Music Tracks to Google Maps: Who Owns Computer Generated Works?'

[144] AIPPI submission to the UK IPO consultation.

[145] Senftleben and Buijtelaar, 'Robot Creativity an Incentive-Based Neighbouring Rights Approach', 809–12.

[146] Ramalho, 'Will Robots Rule the (Artistic) World?', 22.

[147] Denicola, 'Ex Machina: Copyright Protection for Computer-Generated Works', 286–87.

[148] Bensamoun, Farchy, and Schira, 'Mission Intelligence Artificielle et Culture', 86.

[149] Mezei, 'From Leonardo to the Next Rembrandt – The Need for AI-Pessimism in the Age of Algorithms'.

[150] Jacopo Ciani, 'Learning from Monkeys: Authorship Issues Arising from AI Technology', in *Progress in Artificial Intelligence*, ed. Paulo Moura Oliveira, Paulo Novais, and Luís Paulo Reis, Lecture Notes in Computer Science (Cham: Springer International Publishing, 2019), 275–86, https://doi.org/10.1007/978-3-030-30241-2_24.

[151] Guido Noto La Diega, 'Artificial Intelligence and databases in the age of big machine data', in *AIDA: annali italiani del diritto d'autore, della cultura e dello spettacolo*, ed. Luigi Carlo Ubertazzi, XXVII–2018 (Milano: Giuffrè Francis Lefebvre, 2018), 93–149.

[152] Lauber-Rönsberg and Hetmank, 'The Concept of Authorship and Inventorship under Pressure'.

[153] Madeleine de Cock Buning, 'Artificial Intelligence and the Creative Industry: New Challenges for the EU Paradigm for Art and Technology by Autonomous Creation', in *Research Handbook on the Law of Artificial Intelligence*, ed. Woodrow Barfield and Ugo Pagallo (Edward Elgar Publishing, 2018), 511–35, https://doi.org/10.4337/9781786439055.00032.

[154] McCutcheon, 'The Vanishing Author in Computer-Generated Works: A Critical Analysis of Recent Australian Case Law'.

- Bonadio & McDonagh call for a short-term sui generis protection.[155]
- In many of these proposals there is an explicit reference to (and inspiration drawn from) the existing regime of sui generis protection of databases.[156]

- **Proposals for "trademark-like approach with an emphasis on protection against unfair competition"** have especially been considered in Japan in 2016.[157] [158] [159]

- Proposals for *Domain public payant* or the like:
  - Grubow proposal to establish a CMO for collecting a standard fee for using AI output, funding an AI-liability insurance fund.[160]

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[155] Enrico Bonadio and Luke McDonagh, 'Artificial Intelligence as Producer and Consumer of Copyright Works Evaluating the Consequences of Algorithmic Creativity', *Intellectual Property Quarterly* 2 (2020): 112–37.

[156] condition of investment, verification or presentation of content of a database, excluding the investments for the creation of data: CJEU Judgments in *The British Horseracing Board*, C-203/02, ECLI:EU:C:2004:695; *Fixtures Marketing*, C-46/02, ECLI:EU:C:2004:694; *Fixtures Marketing*, C-338/02, ECLI:EU:C:2004:696; *Fixtures Marketing*, C-444/02, ECLI:EU:C:2004:697

[157] Intellectual Property Strategy Headquarters, Japan, 'Intellectual Property Strategic Program 2016', n.d., www.kantei.go.jp/jp/singi/titeki2/kettei/chizaikeikaku20160509_e.pdf.

[158] Giancarlo Frosio, 'Copyright - Is the Machine an Author', in *Artificial Intelligence in the Audiovisual Sector*, ed. Maja Cappello, IRIS Special 2020-2 (Strasbourg, France: European Audiovisual Observatory, 2020), 87–115.

[159] Jani Ihalainen, 'Computer Creativity: Artificial Intelligence and Copyright', *Journal of Intellectual Property Law & Practice* 13, no. 9 (2018): 727–28, https://doi.org/10.1093/jiplp/jpy031.

[160] Grubow, 'O.K. Computer: The Devolution of Human Creativity and Granting Musical Copyrights to Artificially Intelligent Joint Authors'.

7. Conclusions, Policy Options, Recommendations, and Next Steps

This Chapter will provide a summary of the preceding analysis, identify policy options and provide recommendations. At this stage of the research, it is premature to advance these.

The next steps in the project are as follows:

- Incorporate comments from internal peer-reviewers to improve structure and content of the analysis, as well as case studies, interview questions and selection of interviewees.
- Our desk research for purposes of doctrinal legal analysis is ongoing.
- Conclude questionnaires and approach interviewees.
- Conduct interviews and review results.
- Incorporate results of interviews in research and report.
- Carry out internal discussions within the reCreating Europe consortium and with select external experts on findings.

Case studies

There are multiple projects and businesses that relied on AI technologies for creating musical content (Mezei advances existence of the "AI creative industry"[161]). These undertakings dealt to various extent with copyright issues, notably with those of attribution of authorship, ownership and exercise of rights. Of course, grant of copyright is a matter of statutory law. Yet, it is for the private parties involved and having the factual knowledge about involvement and roles of all persons involved in the creative process to designate authors and rightholders. The case study intends to examine how multiple actors in the music industry dealt with different questions related to AI output.

Number of case-studies: 10 (under consideration)

Use of case study results: We will insert text boxes with specific cases or summaries of several cases into the main body of text. There will be no separate section "Case studies". Some relevant information regarding case studies could be moved to an annex if it overloads the main body of text.

Case studies process:
- Review of existing materials on the projects:
    - websites / terms of use
    - interviews with company's founders and managers
- Test projects' functionalities (initiating creation of AI outputs using online AI services; examining level of human input);
- Draft questionnaire (also intended to test / obtain information necessary for application of the 4-step test / 3 phases of the AI process[162])
- Final decision on the organisations and persons to contact
- Collection of contact details
- Organisation of interviews
- Follow-up and minutes validation

Interview process

Interviewees will be approached via email and/or over the telephone in order to determine convenient date/time slots for the interview. The research team will rely on the extensive professional contacts of its members and will also use LinkedIn Premium as a tool for identifying and/or contacting the most relevant persons for an interview.

Each interview will last between 30 and 60 minutes, depending on the type of the interviewee's organisations, his/her experiences and knowledge as well as interviewee's availability.

The majority of interviews will be carried out on a distance, using modern video-conferencing tools (e.g., Zoom or MS Teams) or by telephone. The research team has the necessary equipment and experience in conducting online meetings.

Minutes of each interview will be prepared and sent to each interviewee for his/her approval. Depending on the interviewees' consent and quality of collected responses, interviews' metadata will be annexed to the Study.

Each interview will be carried at least by two interviewers, one of them being focused on accurate transcription. An expert in the field will lead each interview, relying on his/her expertise to adjust the

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[161] Mezei, 'From Leonardo to the Next Rembrandt – The Need for AI-Pessimism in the Age of Algorithms', 390.

[162] Hugenholtz et al., 'Trends and Developments in Artificial Intelligence: Challenges to the Intellectual Property Rights Framework', 77–84.

standardised interview questions as appropriate. The two-persons-minimum rule is applied to achieve a high level of quality of questions and interview minutes.

If appropriate, arrangements will be made to follow-up on the responses provided in the interview for the purposes of clarifying or developing upon information and data elicited through the interview. One form of such foreseen follow-up is written queries requesting documents and/or information that the interviewee agreed to provide during the interview. Interviews will serve to establish relations of confidence and cooperation. As the format of interviews commonly does not permit obtaining precise quantitative data, the interviewers will seek data contributing to the quality of quantification of the data issues. Where interviewed representatives of stakeholders express their willingness to contribute to the Study with further data, they will be accompanied with follow-up written queries.

All interviewees will be offered to sign a non-disclosure agreement (NDA), as a supplementary guarantee of the security of shared information.

Cases

The selection of cases will be made around different AI projects with musical output. The target could be set at **10 cases**, each case requiring a study of one AI project and a few interviews. Interviews with some stakeholders could serve for several cases at once.

Each case study will include interactions with several related actors:
- **AI projects** (the AI projects are usually **developers** of AI; to discuss humans' role at different stages of AI output creation (using the 3 phases of AI creative process as a tool for analysing human involvement); to scrutinise the practice of assignment of roles and rights)
- **AI users:**
  - **artists** that used AI;
  - where AI tools are readily available for use, **to test them as a user**.
- Other actors dealing with AI output and which have to make decisions on authorship/ownership:
  - **CMOs** (e.g., SACEM registered AIVA project works in its repertoire)
  - **music service providers** (about use and conditions thereof of AI music)

Draft questionnaire [work finalized will be provided in the final report D3.5]

[available upon request]

Contacts

[Personal data omitted]

AI Projects

[List provided to internal Quality Experts; under consideration]