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Intellectual Property Right Protection for Works and Inventions Produced by AI – Copyrights and Patent Rights

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DECLARATION OF HONOUR:

I declare that this thesis is my own work, and that all references to, or quotations from, the work of others are fully and correctly cited.

(Signed)

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ABSTRACT

The use of Artificial Intelligence (AI) in different operations concerned with Intellectual Property (IP) grows rapidly. Yet, there is no legal act regulating IP rights (IPRs) of an output that was created or invented with the help of AI. Hence, it is important to understand, whether AI output can enjoy copyright and patent protection.

Therefore, firstly, the concepts of *work* and *invention* are examined, as well as two kinds of AI output – AI-assisted and AI-generated – are analysed. Secondly, deontological and utilitarian IPR justification theories are explored to see whether they can be applicable to protection of AI output. Thirdly, court judgements are discussed, topicality of the findings for businesses is established, and recommendations for potential IP legislation improvements are proposed.

The results show that AI-assisted output can enjoy copyright and patent right protection, so far a human has sufficiently participated in the production process. AI-generated output fails to be granted protection.

Key words: artificial intelligence, intellectual property, copyrights, patents, author, inventor, work, invention.

SUMMARY

This thesis deals with analysis of copyright and patent right protection for creative works and inventions produced by AI, as well as identification of the relevant legal issues that require attainment from businesses' and legislators' side.

In the first chapter the author examines the concept of a copyright-protected work and patentable invention, as well as the two AI output kinds. Relevant legal acts and remarks of the Court of Justice of the European Union (CJEU) are observed, as well as academic literature on the topic. The author finds that copyright-protected work must have features and requirements set by the CJEU. Specifically, a work is going to be copyright-protected if it is of artistic or literary nature, and it must be original and creative, thus, reflecting its author's intellectual effort and personality. Hence, AI-generated output cannot meet the pre-requisite. In regards to patent rights, the author concludes that patentability requirements – protectable subject-matter, novelty, inventive step and industrial applicability – must be met. Those are not concerned with personality of the inventor, however, the author discovers that there are application grant formalities precluding AI-generated output to be protected.

In the second chapter the author discusses deontological and utilitarian IPR justification theories. The author explores the essence of existing copyright and patent right protection justification theories and whether AI output protection can be justified by these theories. The author finds that AI-generated output fails to be justified as entitled to copyright protection, as it does not reflect a human's personality or intellectual effort/labour. As for AI-assisted output, it appears that copyright protection of it can be justified, as long as there is sufficient input from a human's side during the creation process. Justification of patent rights lies in the value the invention and its protection brings. If inventors and investors knew that their invention is going to be instantly available to anyone for free and in large, they would not be motivated to invent and invest in development. Thus, incentives mechanism is something AI does not understand, therefore protection of its autonomous output cannot be justified. Nevertheless, if it was legally possible to indicate AI as *inventor* and grant patent protection for its inventions, justification of such protection could stand on the basis of the value this invention and its patent brings.

In the third chapter the author analyses relevant court judgements, establishes topicality of the findings for businesses, and provides recommendations for potential IP legislation improvements. The author of the thesis observes that there may be different situations when a work was created using AI and a court finds copyrights to be or not to be infringed. That usually depends on the amount the human author has contributed to the creation of the work – if there was sufficient input and originality reflecting a human's intellectual effort and personality, then despite AI being used to implement the idea into a work does not preclude that work from enjoying copyright protection. Whereas if the work in question is just an AI output based on simple and vague commands of a human, that does not meet the threshold to be considered copyright-deserving work, thus, there cannot occur copyright infringement.

Topicality of the findings for businesses is concluded based on the authors observations throughout the thesis, and journal articles regarding the matter. The author highlights the benefits of soft law materials where businesses can seek some guidance on the matters that are not yet regulated, as well as being informed of courts' stance by following case-law. The author also reflects the most reasonable and fitting legal framework for works and inventions that are

AI-generated or AI-assisted output, and proposes recommendations for potential IP legislation improvements. Those include, amending legal acts precluding AI from being indicated as an inventor, so far it is possible to meet other patent grant requirements, like, disclosure of the invention.

TABLE OF CONTENTS

| | |
|--|----|
| Glossary of abbreviations | 6 |
| Introduction | 7 |
| 1. Classification of work, invention, author, inventor and AI output..... | 10 |
| 1.1 What AI produced output is protected by copyrights and patent rights and who is to be regarded as “author” and “inventor”?..... | 11 |
| 1.1.1 Copyrights and “author” | 11 |
| 1.1.2 Patent rights and “inventor” | 14 |
| 1.2 Two types of AI output – AI generated and AI assisted output | 16 |
| 2. Deontological and utilitarian IP justification..... | 20 |
| 2.1 Deontological justification of IP rights for AI works..... | 21 |
| 2.2 Utilitarian justification of IP rights for AI works | 23 |
| 3. Relevant copyright and AI issues case-law analysis, topicality of the findings for businesses, and recommendations for potential IP legislation improvements or new conventions | 28 |
| 3.1 Relevant copyright and AI issues case-law analysis | 28 |
| 3.2 Topicality of the findings for businesses..... | 33 |
| 3.3 Recommendations for potential IP legislation improvements or new conventions | 36 |
| Conclusion..... | 38 |
| Bibliography | 41 |
| Primary sources | 41 |
| Legislation | 41 |
| Case-law | 41 |
| Secondary sources | 41 |
| Books | 41 |
| Journal articles and soft law | 42 |
| Other sources | 43 |

GLOSSARY OF ABBREVIATIONS

| | |
|------|--|
| AI | Artificial Intelligence |
| CJEU | Court of Justice of the European Union |
| EC | European Commission |
| EP | European Parliament |
| EPC | European Patent Convention |
| EPO | European Patent Office |
| EU | European Union |
| IP | Intellectual Property |
| IPRs | Intellectual Property Rights |
| MS | Member State |

INTRODUCTION

Use of AI arose approximately in the late 1950s, and the role of AI in society has been increasing rapidly ever since.¹ People of multiple industries, including those intensive of IP, have implemented different AI tools in their everyday processes to facilitate the production and make it faster and easier.² Considering that efficiency is one of the key concepts and development targets of the modern world,³ it is clear that significance of AI will continue to bloom, as new tools like “ChatGPT”, “DALL-E”, “Bard”, “Gemini”, etc. appear regularly already now.⁴

Despite the benefits those and other AI tools of similar purpose bring, issues arise when the output of such tools is not regulated.⁵ Meaning, when there is no clear answer regarding the ownership, legal purpose of the use, limitations of the use, and many more rights concerning the output that was produced with the help of or solely by AI tools.⁶ The importance of such regulation lays in the fact that although AI tools make humans’ life easier in certain situations, there are some cases when extensive use of the help of AI might cause legal issues or uncertainties in respect to IPRs for humans.⁷ Those are the events when *human presence* in the creation of a work is almost erased by the role of AI tool during the production stage.⁸ Such a situation becomes problematic after the work is created – when a question arises, who has the ownership right of that work.⁹

As this thesis concerns IPR justification – in particular, copyrights and patent rights – when a work or an invention is created using AI, the ownership issue is at focus. The legal issue at question is the protection of IPRs when a work or an invention is created with the help of AI tool. Uncertainty arises due to the fact that existing relevant IP laws which stipulate protection subject matter of copyrights and patent rights, at the moment, do not acknowledge and address any authors or inventors other than humans, as well as stipulate protection grant pre-requisites that require human involvement.¹⁰ Furthermore, the problem is not just in the absence of a term *AI* in the laws regulating IP rights, it is also in the justification theories underlying the IP right system, be it either deontological or utilitarian theories.¹¹

As a result, what happens is that in the event a human participates very minimally in the creation of some kind of a work, which would normally have IP protection, and the whole

¹ Anyoha Rockwell, “The History of Artificial Intelligence,” *Science in the News, Harvard* (2017), available on: <https://sitn.hms.harvard.edu/flash/2017/history-artificial-intelligence/>. Accessed February 2, 2024.

² Jonathan P. Osha, *Artificial Intelligence and Patents: An International Perspective on Patenting AI-Related Inventions*, (The Netherlands: Kluwer Law International B.V, 2023), accessed November 27, 2023. <https://wklldigitalbooks.integra.co.in/Customr/Home/BookDetails>.

³ Economic and Social Goals, available on: <https://www.studysmarter.co.uk/explanations/microeconomics/economic-principles/economic-and-social-goals/>. Accessed May 1, 2024.

⁴ Osha, *supra* note 2.

⁵ Ana Ramalho, *Intellectual Property Protection for AI-generated creations: Europe, The United States, Australia and Japan*, (The United Kingdom: Routledge, 2021), accessed November 27, 2023, <https://www.routledge.com/Intellectual-Property-Protection-for-AI-generated-Creations-Europe-United/Ramalho/p/book/>.

⁶ *Ibid.*

⁷ *Ibid.*

⁸ *Ibid.*

⁹ *Ibid.*

¹⁰ *Ibid.*

¹¹ Ole-Andreas Rognstad, *Property Aspects of Intellectual Property* (Cambridge: Cambridge University Press, 2018), accessed March 13, 2024, <https://doi.org/10.1017/9781139680318>.

production is performed by AI, according to existing laws, it is not automatically evident that such an output can be protected and considered an IP of that human who, presumably, only turned on the AI machine.¹² This creates issues for both – natural and legal persons – in different scenarios.¹³ When such a work is produced and then someone else decides to reproduce it or blatantly copy it without the permission of the (presumable) author, it is unclear whether that can legally be done.¹⁴ Firstly, it is currently not clear, whether a work or an invention created/invented by an AI program is a copyright or patent right protectable subject matter, and whether AI can be recognized as its author or inventor.¹⁵ Secondly, there are still debates whether AI-generated output is prudent to be conferred copyright and patent right protection considering it against the backdrop of IP rights justification theories and general impact on society at large.¹⁶

Consequently, the legal problem of this research is that since AI is being used more and more in creation of different works or development of inventions, justification for the protection of such works under current IP laws must be explored.¹⁷ Moreover, while the first ever and much anticipated law regulating AI has recently been passed by the European Parliament (EP), namely, the European AI Act, it does not cover IP related issues at all.¹⁸ Creative works and inventions are being produced every day, and it is inevitable that AI tools are becoming more popular in parallel too. Current copyright and patent right laws in Europe do not mention AI as an author or inventor, – only humans.¹⁹ Therefore, it is important to analyse the existing IP rights justification theories for copyright and patent protection, and assess whether such novel development as AI can be accommodated by these, and how taking AI into consideration would impact the existing legal framework.

During this research, three methods are used – doctrinal research methodology, comparative method and normative methodology. Doctrinal research method will imply analysis of relevant legal acts, cases of the CJEU and national courts, as well as scholarly literature. Comparative method will ensure analysis and comparison of justification theories – deontological justification theory and utilitarian justification theory – for copyrights and for patent rights when a work is not created or an invention is not invented with the help of AI, and when it is, in order to observe whether these theories can be used to justify AI output protection. Normative methodology will be used to seek and conclude what would be the most reasonable and fitting legal framework for works and inventions that are AI-generated or AI-assisted output, considering the growing AI use in the development of copyright-protectable works and patentable inventions.

¹² Pieter De Grauwe and Sacha Gryspeerdt, “Qualification of AI creations as “works” under EU copyright law: four-step test,” Lexology (2022), available on: <https://www.lexology.com/library/detail.aspx>. Accessed January 10, 2024.

¹³ Ramalho, *supra* note 5.

¹⁴ Jonathan Griffiths, *Concepts of Property in Intellectual Property Law* (Cambridge: Cambridge University Press, 2013), accessed February 2, 2024, <https://doi.org/10.1017/CBO9781107300880>.

¹⁵ Ramalho, *supra* note 5.

¹⁶ *Ibid.*

¹⁷ Rognstad, *supra* note 11.

¹⁸ Regulation of the European Parliament and of the Council laying down harmonised rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (Artificial Intelligence Act), 13 March 2024. Available on: https://www.europarl.europa.eu/doceo/document/TA-9-2024-0138-FNL-COR01_EN.pdf.

¹⁹ Ramalho, *supra* note 5.

The author sets the following research questions: What is the justification for conferring intellectual property right protection, specifically, for copyrights and patent rights? Does this justification apply also to works and inventions produced by the use of AI? What areas of the legal framework require improvements to address the emerging challenges from the use of AI in creative works and inventions?

The aim of the thesis is to explore copyright and patent right protection for creative works and inventions produced by or with the help of AI, as well as identify the relevant legal issues, which require attainment from businesses' and legislators' side. Therefore the author of the thesis sets the following objectives. Firstly, to analyse classification of work and inventions, and AI output. Secondly, it is to examine deontological and utilitarian IPR justification theories. Thirdly, it is to discuss the relevant court judgements, establish topicality of the findings for businesses, and provide recommendations for potential IP legislation improvements or new conventions.

As regards the legal limitations, the author analyses the Berne Convention for the Protection of Literary and Artistic Works (Berne Convention), Convention on the Grant of European Patents (European Patent Convention), and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement), as well as mentions some national laws' stipulations. Geographical limitations are mainly set for observation of the EU, with court judgements exceptions, as some significant non-EU judgements provide a relevant and valuable perspective.

This thesis consists of three chapters. In the first chapter, the author discusses classification of work and inventions, as well as AI output in order to identify what AI produced output is discussed in the context of potential copyrights and patent rights protection. In the second chapter, the author analyses deontological and utilitarian IPR justification theories to assess whether they can be applicable to AI works, inventions too. In the third chapter, relevant court judgements are analysed, topicality of the findings for businesses is established, and recommendations for potential IP legislation improvements or new conventions are provided.

1. CLASSIFICATION OF WORK, INVENTION, AUTHOR, INVENTOR AND AI OUTPUT

The existing IPR notion is that products of the human mind are entitled to receive the protection.²⁰ Those are rights that a natural person receives in respect to their creation or invention.²¹ What can be observed is that there is no regard to a robot, a program or anything else besides a person – a human.²² International copyright and patent laws stipulate that most often an author or an inventor is a natural person, as will be discussed throughout the chapter.²³ Such an understanding derives from some legal definitions or wording of articles of IP laws or judgements of the CJEU. Phenomena like *work* or *invention* do not have a single uniform definition, though there are some concepts of those terms, which mention certain criteria that an output must have in order to acquire IP protection.²⁴ When adding AI to the equation and trying to determine whether a product can have IP protection and who is the author or the inventor, the issue stems from the fact that many of the aforementioned criteria for an output to enjoy IP protection, that will be discussed throughout this thesis, require human involvement to be met.²⁵ As is going to be discussed further in the sub-chapters, what it means is that some criteria of a work to be IP-protectable, like, originality or creativity, etc. can be satisfied only if there has been a significant role for a human during the production process.²⁶

In addition to that, it must also be noted that there are two types of AI output – AI-assisted output and AI-generated output, which are not the same and therefore require different evaluation approaches.²⁷ While there may not be other examples of AI-generated output besides the DABUS case, where it is claimed that the AI invented two inventions on its own,²⁸ it is important to analyse whether AI-assisted output can enjoy copyright and patent right protection, as well as understand why AI-generated output cannot, at least for now.

Therefore, in order to assess copyrights and patent rights when a work was created or an invention invented using AI, several issues must be discussed, like, what is meant by an *author* and a copyright protectable *work*, what is meant by an *inventor* and an *invention*, how those concepts change if AI is involved in the production, as well as distinguish and explore two kinds of AI outputs.

²⁰ William Cornish, David Llewelyn and Tanya Aplin, *Intellectual Property: Patents, Copyrights, Trademarks & Allied Rights* (Mytholmroyd: Sweet & Maxwell, 2023), accessed January 20, 2024, <https://www.sweetandmaxwell.co.uk/Product/Academic-Law/Intellectual-Property-Patents-Copyrights-Trademarks-and-Allied-Rights/Paperback/43130720>.

²¹ *Ibid.*

²² Ramalho, *supra* note 5.

²³ *See*, TRIPS Agreement, European Patent Convention, etc.

²⁴ Rosa Maria Ballardini, Kan He, and Teemu Roos. "AI-Generated Content: Authorship and Inventorship in the Age of Artificial Intelligence," (2018), accessed January 10, 2024, <https://www.cs.helsinki.fi/u/ttonteri/pub/aicontent2018.pdf>.

²⁵ *Ibid.*

²⁶ *Ibid.*

²⁷ European Commission, Directorate-General for Communications Networks, Content and Technology, Hartmann, C., Allan, J., Hugenholtz, P. et al., *Trends and developments in artificial intelligence – Challenges to the intellectual property rights framework – Final report*, Publications Office of the European Union, 2020: pp. 79-85, accessed April 3, 2024, <https://data.europa.eu/doi/10.2759/683128>.

²⁸ Martin Stierle, "Artificial Intelligence Designated as Inventor – An Analysis of the Recent EPO Case Law" *GRUR International*, 69(9) (2020): p. 918, accessed April 1, 2024, [doi: 10.1093/grurint/ikaa105](https://doi.org/10.1093/grurint/ikaa105).

1.1 What AI produced output is protected by copyrights and patent rights and who is to be regarded as “author” and “inventor”?

1.1.1 Copyrights and “author”

First, it is important to identify the subject of protection of copyrights. Focusing on the EU level, there are three treaties that are relevant for copyrights – Berne Convention, WIPO Copyright Treaty and TRIPS Agreement.²⁹ As stated in the Article 2 paragraph 1 of the Berne Convention,

[t]he 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.³⁰

Thus, it can be observed that the scope of copyright protection consists of different artistic and literary works, although Berne Convention does not provide an exhaustive list – those are just some examples.

Article 9 (2) of the TRIPS Agreement, on the other hand, provides a more general scope of copyright protection in relation to Berne Convention, namely, that

[c]opyright protection shall extend to expressions and not to ideas, procedures, methods of operation or mathematical concepts as such.³¹

However, despite the listed examples of works that may enjoy copyright protection, it must be mentioned that not all such works will be copyright protected.³² The detailed and more thorough understanding of the concept of *work*, as well as the requirements it must comply with in order to be copyright-protected, is to be sought in the judgements of the CJEU.³³

Having identified the subject matter of protection, it is now necessary to see, who is to be regarded as an author of a copyrighted product. Even though Berne Convention frequently mentions a term *author* in its text, there is no precise definition provided. It might be so due to the fact that when the Berne Convention was developed, there was a unanimous idea among the parties regarding the concept of *author*, therefore there was no necessity for more detailed interpretation.³⁴ Neither TRIPS Agreement, nor WIPO Copyright Treaty state a definition of an

²⁹ Ballardini, He, and Roos, *supra* note 24.

³⁰ The Berne Convention for the Protection of Literary and Artistic Works, (1886). Available on: <https://www.wipo.int/wipolex/en/text/283698>. Accessed April 10, 2024.

³¹ TRIPS: Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299, 33 I.L.M. 1197 (1994) (TRIPS Agreement). Available on: https://www.wto.org/english/docs_e/legal_e/27-TRIPS.pdf. Accessed April 10, 2024.

³² Daniel Gervais, “Is Intellectual Property Law Ready for Artificial Intelligence?” *GRUR International*, 69 (2) (2020): pp. 117-118, accessed March 15, 2024. <https://doi.org/10.1093/grurint/ikz025>.

³³ European Commission, *supra* note 27.

³⁴ Jane C. Ginsburg, “The Concept of Authorship in Comparative Copyright Law,” *DePaul Law Review* (2003): pp. 1063-1069, accessed January 20, 2024, <https://via.library.depaul.edu/blue-review/vol52/iss4/3>.

author either. However, there, of course, is a general understanding of an *author* among countries of the EU, which is defined more in detail in their national copyright laws, thus, a precise definition of a term *author* is subject to each Member State's (MS) discretion.³⁵

Though, another source of identification of an *author* is the judgements of the CJEU.³⁶ There is no exact definition there either, but what can be deduced is the overall idea of who the court considers an author in what circumstances. That said, one has to be the original author of a work or have obtained the copyright through transfer.³⁷

Adding AI to the scene, there might be different perspectives regarding the title an AI tool or a program may have when a work was created with its help.³⁸

It is undeniable that AI can indeed produce an output that would look like a literary or artistic work.³⁹ There are multiple examples of AI products of creativity, namely, musical and poetry pieces, visual works, etc.⁴⁰ Nonetheless, not every creation of AI that falls, from the first glance, into a category of the examples of works previously listed, is actually a copyright protectable work.⁴¹ It means that although literary and artistic works are, generally, quite understandable concepts, there still are some features that such works must have in order to be copyright-protected.⁴² Most of them – connected with human character or human *touch*.⁴³

If one looks at the general requirements set by the CJEU, which are also harmonized within EU law, there are two conditions that make a concept of *work* to be recognized.

First, that concept entails that there exist an original subject matter, in the sense of being the author's own intellectual creation. Second, classification as a work is reserved to the elements that are the expression of such creation.⁴⁴

Such a conclusion was determined in a CJEU case *Cofemel – Sociedade de Vestuário SA v. G-Star Raw CV*.⁴⁵ Although it is nowhere mentioned that only a human is to be considered an author, the first point mentions author's intellectual creation, which provides originality. The second point specifies that the expression of the said intellectual creation is what constitutes protectable work.⁴⁶ Hence, it is doubtful that technical considerations made by a machine, where there is no intellectual creation, can ensure originality of a work within the meaning defined by the CJEU.⁴⁷ The Court continues with a statement that

if a subject matter is to be capable of being regarded as original, it is both necessary and sufficient that the subject matter reflects the personality of its author, as an expression of his free and creative choices.⁴⁸

³⁵ Ballardini, He, and Roos, p. 5, *supra* note 24.

³⁶ De Grauwe and Gryspeerdt, *supra* note 12.

³⁷ *Ibid.*

³⁸ Ramalho, *supra* note 5.

³⁹ Gervais, *supra* note 32.

⁴⁰ De Grauwe and Gryspeerdt, *supra* note 12.

⁴¹ Ramalho, *supra* note 5.

⁴² Ginsburg, *supra* note 34.

⁴³ De Grauwe and Gryspeerdt, *supra* note 12.

⁴⁴ CJEU 12 September 2019, C-683/17, para 29.

⁴⁵ *Ibid.*

⁴⁶ William W. Fisher, "Theories of Intellectual Property," *In New Essays in the Legal and Political Theory of Property*. Cambridge, UK: Cambridge University Press, (2001), accessed January 20, 2024, <https://nrs.harvard.edu/URN-3:HUL.INSTREPOS:37373274>.

⁴⁷ De Grauwe and Gryspeerdt, *supra* note 12.

⁴⁸ C-683/17, para 30, *supra* note 44.

Thus, the points made by the Court indirectly imply that an author is considered to be a human. Blatant reproduction of existing material and act by simple commands does not seem creative enough, as well as does not represent the author's personality. Whereas a person – a human – makes creative choices of his/her own, which ensure that the work carries a part of its author's personality, intellectual effort, thus, the essential originality is provided for.

It can be concluded that, in general, there are two criteria that need to be satisfied in order to obtain copyright protection – the creation must comply with the meaning of a *work* as defined by the CJEU and one must be the author of the work (either the original author, or obtain the copyrights through transfer).

So far, the mere presence of AI in the production of a work does not intervene with the aforementioned. Nevertheless, as it was discussed previously, there is a high necessity for the personality of an author to be reflected in his/her work, which can be achieved if there is a sufficient input from a human when creating a work. As the work must be creative, original and demonstrating a *free thought* of an author, it is clear that the involvement of a human must be quite significant to ensure that the mentioned requirements are met. Consequently, as copyright law protects the expression, and there must be *a piece of the author* displayed in the final work, a question to be acknowledged in case a work was created using AI is whether there is “a thought or idea behind the expression”?⁴⁹ Another question that remains unclear is about the threshold or limitation in regard to extent of sufficient human intervention and sole AI action in order to claim copyright protection.⁵⁰ These questions will be addressed later in the thesis.

There is also a more technical facet to ownership of copyrights. It has to do not just with the rights in what authors do but also what they are liable for.⁵¹ Meaning, some scholars believe that a copyright has two mutually non-exclusive sides, therefore, by this theory, it would not be thorough and rational to grant only the right of authorship while that *author* cannot be held liable for, let's say, copyright infringement.⁵² Naturally, a human author can be held liable in the event of a copyright infringement, however, an AI tool, machine, program or even a robot cannot be held accountable under the current legal framework.⁵³ Therefore, it appears that granting copyright to an AI machine is *legally incomplete*, as the second of the two sides cannot be met.⁵⁴

Some scholars believe that “copyright is meant to incentivize communication from human to human, not to get a machine to run its code.”⁵⁵ The author of this thesis believes that this sentence summarizes the means and the essence of the view, why not all products that, technically, look like a work of literary and artistic field, should be considered a work that deserves a copyright protection. It is because of the primary feature that distinguishes a human's work from a computer's output – creativity that has a thought or a feeling of its author behind it, which is not something that an artificial mind or embodiment can have, at least for now.

⁴⁹ World Intellectual Property Organisation. AI work, An IP from IP, Protected. Available on: https://www.wipo.int/export/sites/www/about-ip/en/artificial_intelligence/call_for_comments/pdf/ind_singh_kc.pdf. Accessed February 20, 2024.

⁵⁰ Gervais, *supra* note 32.

⁵¹ *Ibid.*

⁵² *Ibid.*

⁵³ Roger D. Blair and Thomas F. Cotter, *Intellectual Property: Economic and Legal Dimensions of Rights and Remedies* (Cambridge: Cambridge University Press, 2005), accessed April 1, 2024, <https://doi.org/10.1017/CBO9780511614521>.

⁵⁴ *Ibid.*

⁵⁵ Gervais, *supra* note 32.

1.1.2 Patent rights and “inventor”

The notion underlying patent rights is either that the invention is something completely new or it is an improvement of something that already exists.⁵⁶ Patent right is an exclusive right to an invention.⁵⁷ Although generally there is an understanding of a word *invention*, there is no positive definition in Europe for the phenomenon.⁵⁸ However, what is clear is that an invention must be technical – meaning, having technical character, concerned with a technical problem and having technical features.⁵⁹ Unlike copyrights, patent rights require registration in order to *be in force*.⁶⁰

As stated in the EPC Article 52 (1),

European patents shall be granted for any inventions, in all fields of technology, provided that they are new, involve an inventive step and are susceptible of industrial application.⁶¹

Thus, conditions of grant of patent rights include protectable subject matter, novelty, inventive step and industrial applicability. It can be summarized in a concept that a patentable invention is a technical solution to a technical problem.

When thinking about answering a question of whether AI can be an inventor under current legal framework, the context and wording of the text of the articles can be analysed. For example, Article 60 of the EPC, which is concerned with explaining who can have a right to a European patent, states in its first paragraph that “[t]he right to a European patent shall belong to the inventor or his successor in title”.⁶² Then the same paragraph continues by mentioning employee as an inventor and what happens if a patent is created during an employment relationship.⁶³ This shows a sense of a human being meant behind the words chosen for the article, as till this day only humans can be considered employees. The second paragraph already mentions a word *person* and *persons*, which even more indicates that it is a human, who can have a right to a European patent, therefore, to be an inventor.⁶⁴ Paragraph three of Article 60 says that

[f]or the purposes of proceedings before the European Patent Office, the applicant shall be deemed to be entitled to exercise the right to the European patent.⁶⁵

This sentence suggests that it is doubtful that an AI program or a tool would be eligible to exercise a right to the European patent. Furthermore, a patent grant application requirement mentioned in the Article 81 of the EPC demands the inventor to be mentioned, therefore even if one tried to patent an AI invention without mentioning the inventor (knowing that an AI program would not be accepted as an inventor), such a scheme would be invalid in the end as well.⁶⁶

⁵⁶ Cornish, Llewelyn and Aplin, *supra* note 20.

⁵⁷ *Ibid.*

⁵⁸ Ballardini, He, and Roos, *supra* note 24.

⁵⁹ *Ibid.*

⁶⁰ Convention on the Grant of European Patents (European Patent Convention), (1973). Available on : <https://www.epo.org/en/legal/epc/2020/convention.html>. Accessed April 3, 2024.

⁶¹ *Ibid.*

⁶² *Ibid.*

⁶³ *Ibid.*

⁶⁴ *Ibid.*

⁶⁵ *Ibid.*

⁶⁶ *Ibid.*

It is also worth mentioning that national laws of the majority of MS of EU do not provide an exact definition of a term *inventor*.⁶⁷ To add, there is a notion that under European patent law only natural persons can make inventions.⁶⁸ It can be concluded also from the information that is required when filling in the application for the patent as an inventor. Such inquiries include name, surname and full address of the inventor, which, of course, is something typical of a human rather than a tool, a program, or even a robot for that matter.⁶⁹

Another angle that can be taken to assess inventorship is the essence of invention. While from the perspective of wording of the articles it is quite apparent that a non-human inventor cannot be legally acknowledged as an inventor, the characteristics of invention shall also be considered.

As mentioned previously, the application for patent grant requires the inventor to be indicated,⁷⁰ and, because it is supposed to be a natural person, there is a sense of a causal link with a human inventor. Therefore, a question arises, whether the human inventor's personality must be reflected in the invention similarly as in case of creative works.⁷¹

When considering a patent, the previously mentioned requirements (novelty, inventive step, etc.) are evaluated.⁷²

These requirements are assessed based on the knowledge of a person skilled in the art (PSITA), which is 'presumed to be a skilled practitioner' (i.e. a human being) 'who is possessed of average knowledge and ability with normal means and a capacity for routine work and is aware of what was common general knowledge in the art at the relevant date'.⁷³

The PSITA test helps to identify whether a certain human at a certain time could have invented the said invention. Frankly, it appears that it does not really matter whether the invention was invented by a human – the test simply assesses patentability from an objective point of view.

The evaluation is clearer with copyrights, as there those are the creative choices of an author and their amount that is being evaluated. In case of patents, that is the inventive step, where the evaluation is carried out by "looking at what a fictional 'person skilled in the art' would do".⁷⁴ Therefore, the inventiveness of a human inventor must be analysed and linked to the invention itself. A logical question, thus, appears, whether it is the same dilemma as with copyrights – is it fair to request some *human character* to be reflected in the invention? While with copyrightable work it makes sense, as creativity is an important factor underlying the requirements of copyright-protected works, it is not clear whether a technological invention would even be able to fulfil requirement of reflecting its inventor's personality.

It is clear that in case of copyrights the need for a presence of a human character in a work is stronger. To clarify, because copyrightable work is more creative and artistic, it makes sense that a human touch plays a big role in that. Thus, giving copyrights to an AI machine does sound slightly contradictory to the very essence of what constitutes a copyrightable work.

⁶⁷ Ballardini, He, and Roos, p. 8, *supra* note 24.

⁶⁸ *Ibid.*

⁶⁹ *Ibid.*

⁷⁰ European Patent Convention, *supra* note 60.

⁷¹ Ballardini, He, and Roos, p. 8, *supra* note 24.

⁷² *Ibid.*, p. 9.

⁷³ *Ibid.*

⁷⁴ Gervais, *supra* note 32.

Patents, on the other hand, are not concerned with creativity. Patentable works are technological inventions, thus, maybe the issue with granting patent rights to an AI machine is not so much or not in majority concerned with the essence of a patent itself, rather with formalities such as the application form, liability and some other implications arising from the fact that an AI robot, a program or a tool – any non-human inventor – does not have a legal capacity.

While both copyright and patent right laws do not provide exact, unanimous definitions of terms *author* and *inventor*, or do not exactly exclude AI or any other non-human creature with direct wording of the articles, the need for human involvement can be sensed. However, not in the same way for patentable inventions as for copyright protected works. As provided by the CJEU, for works to be copyright protected the need for human input is connected with the work itself and what it reflects. Whereas for patents – it is, in majority, a matter of formalities. the texts of the relevant articles of the legal acts do provide clues that suggest it to be rather a human and not any other non-human creature.

1.2 Two types of AI output – AI generated and AI assisted output

To analyse copyright issue when a work was created using AI further, it is crucial to distinguish the two kinds of AI output, which are AI-generated output and AI-assisted output.⁷⁵ This difference is important because in it lies the main reasoning about what AI output could be protected with copyright.⁷⁶

In regard to AI-generated output, it can be said that it is a product created individually by an AI machine, tool or program with no human intervention.⁷⁷ As the European Commission (EC) states, so far there have not yet been such cases of creative works, as right now a human is needed at least for the task of switching the machine on and giving a command.⁷⁸

Speaking of AI-assisted output, that is a work in the creation of which a human participates as well.⁷⁹ Meaning, in such a case a human is using an AI machine, program or a tool in order to facilitate or really *bring to life* his vision.⁸⁰ It would be fair to compare AI tool to a pencil or a paint brush, or a digital painting platform, for that matter, which all are different tools that help an artist to create his work.⁸¹ Nevertheless, the involvement of a human, as well as the use and role of AI, in the creation process may vary from case to case.⁸²

Focusing on IPR justification in respect to works that have been created using AI, EC has proposed a four-step test that serves to clarify how and whether AI-assisted outputs and AI-generated outputs can qualify as a *work* within the meaning of it as stipulated by the copyright laws of EU.⁸³ However, it must be kept in mind that such recommendations are not binding.

⁷⁵ Reto M Hilty, Jörg Hoffmann, and Stefan Scheuerer, “Intellectual Property Justification for Artificial Intelligence,” *Artificial Intelligence and Intellectual Property*, Oxford (2021), accessed November 27, 2023, <https://papers.ssrn.com/sol3/papers>.

⁷⁶ De Grauwe and Gryspeerdt, *supra* note 12.

⁷⁷ *Ibid.*

⁷⁸ European Commission, *supra* note 27.

⁷⁹ *Ibid.*

⁸⁰ *Ibid.*

⁸¹ Ballardini, He, and Roos, *supra* note 1.

⁸² De Grauwe and Gryspeerdt, *supra* note 12.

⁸³ European Commission, *supra* note 27.

Firstly, it is important that the AI output is a “production in literary, scientific or artistic domain”.⁸⁴ While there is no exhaustive list of such output examples, and Berne Convention provides just a few that have been mentioned earlier, the output in question must look like a product that would normally be copyright-protected. This step is the easiest for AI output to meet, as it has already become evident that AI is capable of producing pieces that may look like ones created by humans.

Secondly, it is required that the AI-assisted output is a result of a human’s intellectual effort.⁸⁵ The EC refers to the *Painer v. Standard Verlags GmbH and others* case, because in it the CJEU had confirmed that a work created with the help of a device (in that case, the question was regarding a photograph) can be copyright-protected even if it visually lacks creativity, but an effort, like, lightening, framing, etc. the artist made was great.⁸⁶ Here, apparently, the analogy of EC was that AI too can be used just to implement what is in the mind of an artist. However, one might say that there is a fair difference between a camera that captures a moment and an AI program that usually alters the output itself. Nevertheless, as mentioned previously, intellectual effort is a precondition set by the CJEU to consider a work copyright-protectable, thus, so far there is a human involvement in the form of intellectual decisions and AI is used merely as a tool to really *physically* create the product, this step would be met. The commands entered by a human or the conceptual points requested by a human would probably constitute the sufficient base for a human’s intellectual effort requirement to be fulfilled.

Thirdly, originality is a very crucial component of the test. The *Painer* case and the Court’s statements throughout the judgement show that it is the creativity that defines it.⁸⁷ As summarised by the EC,

[A] creative combination of ideas at distinct stages in the production process might be enough for the result to qualify as a “work” protected under EU copyright [law].⁸⁸

It appears that creative choices made by an author during the production of a work is what constitutes originality. In the event of assistance of AI, the creative choices can still be made by a human who uses it. What matters is that the decisions, like, which design or colour to use, what tune to create or what story to write, are taken by a human. Then the fact that an AI tool is used to actually implement those decisions does not make the work less qualified for copyright protection. Thereby, a human’s involvement is still crucial to the production process and the final result.

In order to fairly assess the originality criterion, there are two phases that need to be considered when evaluating – conception phase and execution phase.⁸⁹ Conception phase

involves creating and elaborating a work and requires a series of detailed design choices, such as genre, style, materials and technique. These decisions can also entail the choice of the AI system, as well as the selection of input data. With AI-assisted outputs, these choices will mostly be exercised by a natural person. The AI system will, in general, play no role in this phase.⁹⁰

⁸⁴ *Ibid.*

⁸⁵ *Ibid.*

⁸⁶ CJEU, 1 december 2011, C-145/10, para 2 of the ruling .

⁸⁷ *Ibid.*, para 99.

⁸⁸ European Commission, p. 79, *supra* note 27.

⁸⁹ *Ibid.*, pp. 79-80.

⁹⁰ De Grauwe and Gryspeerdt, *supra* note 12.

The paragraph above makes it clear that the first phase of the production of a copyright protectable work is a human's responsibility, thus, it gives another confirmation in addition to the second step of this test that a human's input is integral for an output to enjoy copyright protection.

To continue with the second phase, which is the execution phase, it involves converting the design or plan into draft versions of the final work. Examples include:

- producing text;
- recording music;
- taking photographs; and
- coding of software, etc.

In this phase, the AI system will often play a dominant role in the creative process, whereas the user will have a rather more operational role by guiding the AI system towards the desired output.⁹¹

This is the part where the work is mostly done by an AI machine, however, in the role of a tool or a system that is still supervised and controlled by a human-actor. Even though an AI program is the one that puts some art pieces or music parts together, it still acts on behalf of the human that operates with it, so those are still the creative choices made by a human and *brought to life* with the help of an AI tool, thus, maintaining the originality.⁹²

While some might say that creative choices may, in theory, be made by an AI robot (maybe in the future), the CJEU has already established a parameter of originality.⁹³ The case of 2009 *Infopaq International A/S v. Danske Dagblades Forening* was relevant to the question, and the Court established that

[i]t is only through the choice, sequence and combination of those words that the author may express his creativity in an original manner and achieve a result which is an intellectual creation.⁹⁴

With such a statement, the CJEU set a standard of originality. This particular wording indirectly indicates that non-human creators are excluded due to the sense of a human-author's personality/character being a mandatory prerequisite to ensure creativity, intellectual creation.

Fourthly, the expression must reflect the initial idea and intent of an author.⁹⁵

The work needs to be identifiable with sufficient precision and objectivity. [...] as long as the output stays within the ambit of the author's general authorial intent, this condition should not form an obstacle.⁹⁶

Here the issue with AI output is that it is not possible to predict the final subject-matter produced by an AI machine.⁹⁷ Meaning, when a human has an idea of a painting, for example, that he wants to make, there most likely is an initial picture in his mind. Of course, that picture may change over the time of making but some patterns will still stay. Yes, there are very abstract pieces of art that were created in the moment of inspiration strike but still there is some thought

⁹¹ *Ibid.*

⁹² *Ibid.*

⁹³ AI IN EU COPYRIGHT LAW. Available on: <https://medium.com/@dustin.jaacks/artificial-intelligence-in-eu-copyright-law-55798700da4>. Accessed January 20, 2024.

⁹⁴ CJEU, 16 July 2009, Case C-5/08, para 45.

⁹⁵ European Commission, *supra* note 27.

⁹⁶ De Grauwe and Gryspeerdt, *supra* note 12.

⁹⁷ Hilty, Hoffmann, and Scheuere, *supra* note 74.

and intent of the artist behind the final result – the artist can imagine what his work can look like in the end. Whereas with an AI machine it is never an option to know exactly how the final output is going to look. Therefore, if an AI system was to create its own work (in theory), there would definitely not be an initial intent behind it or an idea, or a *draft picture*, and therefore it would even more certainly not be possible to deduce whether the final result corresponds to the initial intent or idea. Hence, if a human author would want to prove that a certain piece, which was created with the help of an AI tool, really depicts his initial thought, some scholars suggest documenting the whole process of creation of the work.⁹⁸

This proves that a human’s involvement is necessary for this step’s requirement to be met as well. Consequently, as long as the human actor’s input is reflected in the work and it is unique, this requirement is going to be fulfilled.⁹⁹

The four-step test has clearly shown why, for now, AI-generated output could not be considered as a copyright-protectable work under EU copyright law. AI-assisted output, on the other hand, can enjoy copyright protection. However, as the test has outlined, most of the requirements that need to be met, in case a work was created with the help of AI, have to do with a human personality being reflected in the work in quite a significant way (although, the threshold for the sufficient amount/significance may depend on each case individually).¹⁰⁰ More precisely, under current legal framework, including case-law, it is essential for a copyright protectable work to reflect its author’s personality. Furthermore, some other requirements, like originality, imply a human author’s intellectual contribution.

That said, while the existing EU copyright laws do not exclude non-human authors with a text directly mentioning that, it can be deduced from the wording and context that indirectly it is so. Therefore, if AI-generated output is ever going to enjoy copyright protection, current legal framework will have to be changed or some new regulations, conventions and other legal instruments will have to be developed.¹⁰¹ The presence of AI during the creation of a copyrightable work is acceptable so far it does not supersede the input of a human, and a human’s character is noticeable in the work.

⁹⁸ Ramalho, *supra* note 5.

⁹⁹ Rowena Rodrigues, “Legal and human rights issues of AI: Gaps, challenges and vulnerabilities,” *Journal of Responsible Technology*, accessed March 1, 2024, <https://www.sciencedirect.com/science/article/pii/S2666659620300056>.

¹⁰⁰ Artificial Intelligence and Music: Open Questions of Copyright Law and Engineering Praxis, available on: <https://www.mdpi.com/2076-0752/8/3/115>. Accessed March 20, 2024.

¹⁰¹ Rodrigues, *supra* note 98.

2. DEONTOLOGICAL AND UTILITARIAN IP JUSTIFICATION

One explanation as to why IPR protection makes sense and is necessary is because protection of one's created work or an invented invention incentivizes the creator or inventor to develop even more.¹⁰² It is logical that a common goal of a society is to develop over time, thus, it is beneficial to everyone if something interesting, new is created or if something useful is invented. Therefore, when thinking about reasoning behind a justification of granting a copyright or a patent right, there are different theories which explain that.¹⁰³ As a result, by understanding the necessity of protecting these IPRs, it might also be helpful to determine whether the same justification theories would be applicable to justification of a work or an invention that has been created or invented by or with the help of AI. On the other hand, it must also be kept in mind that excessive IPR protection can be dysfunctional and even create negative impact.¹⁰⁴

Considering that the use of AI tools during the creation and invention process is becoming more and more popular each day, it appears necessary to look into the need for IP protection and the current theoretical justifications there are.

It should be recalled that in a liberal society based on a market economy there is no need to justify why IP protection is not awarded. On the contrary, the question is why (and under which circumstances) IP rights are necessary.¹⁰⁵

Hence, justification theories of IPR might be a source or at least another *point of view* in respect to copyright and patent right justification of a work or invention that was created/invented using an AI machine, program, system, robot or any other tool.

While the traditional approach is that IPR justification is based on deontological or utilitarian economic grounds, the involvement of AI “might change the underlying paradigms”.¹⁰⁶ It can be explained with the fact that both deontological and utilitarian justification theories are based on human effort.¹⁰⁷ Meaning, what is serving as the justification is either the fact that there was a human effort – the labour – performed or that a piece of work contains personality of its author, or that IPR protection is a reward, which is fair to be granted if a person has done something for the benefit to the society (in case of deontological justification).¹⁰⁸ In addition to that, justification is also found in the belief that a person is going to be more productive if he has an economic motivation to do more and better – incentive mechanisms (in case of utilitarian justification).¹⁰⁹ What is in common between the aforementioned notion and what was discussed in the previous chapter – the necessity for a human. To clarify, it can be seen that what serves as a justification for IPR is something that is typical of a human – labour, personality, or material values as a form of incentive, etc. As was discussed in the first chapter, while the requirements for a work to be copyright-protected or an invention to be patentable do not exclude non-human authors/inventors *per se*, those requirements are based on a human character. AI, on the other hand, was primarily developed to reduce human effort.¹¹⁰

¹⁰² Hilty, Hoffmann, and Scheuere, *supra* note 74.

¹⁰³ *Ibid*, p. 4.

¹⁰⁴ *Ibid*.

¹⁰⁵ *Ibid*.

¹⁰⁶ *Ibid*.

¹⁰⁷ *Ibid*.

¹⁰⁸ *Ibid*, pp. 4-6.

¹⁰⁹ *Ibid*, pp. 12-26.

¹¹⁰ Ramalho, *supra* note 5.

Nevertheless, it is necessary to dive deeper into the essence of each justification theory to conclude for sure whether IPRs are justifiable if a work was created or an invention invented by AI.

2.1 Deontological justification of IP rights for AI works

There are three main deontological justification theories that can be distinguished – a labour theory, a personality theory and a reward theory.¹¹¹ They are more relevant for copyrights segment of IPRs, however, can be applied to patent rights as well.¹¹²

The labour theory is based on a presumption that a person deserves and is entitled to own rights over his property due to the labour this person put into making it (the respective subject matter).¹¹³ *Labor* in this case is seen as a “value-producing activity”.¹¹⁴ As has been stated by John Locke, who is the initial developer of the labour theory, people are entitled to receive the “fruits of their own labour”.¹¹⁵ It sounds reasonable that, because one puts in the effort and time into making something, which turns out to be a certain subject matter created by that specific person, this person has the ultimate right over that *something*. Naturally, because of the dilemma with AI works and IPRs, one could ask whether this theory could also be applicable to justify IPRs of an AI machine or a robot, since it is based on labour and labour could, in theory, mean any labour, including a non-human labour. This sounds like a fair point, as labour theory does not specify that it counts only human labour and it does not mention any requirements or *check points* that are of human nature and which would indirectly indicate exclusion of non-human labour.¹¹⁶ However, if one is interested in the true thought that was behind labour theory, one must look at the formulation of John Locke’s argument about property taken in conjunction with labour:

[t]hrough the earth, and all inferior creatures, be common to all men, yet every man has a property in his own person: this nobody has any right to but himself. The labour of his body, and the work of his hands, we may say, are properly his. Whatsoever then he removes out of the state that nature hath provided, and left it in, he hath mixed his labour with, and joined to it something that is his own, and thereby makes it his property. It being by him removed from the common state nature hath placed it in, it hath by this labour something annexed to it that excludes the common right of other men. For this labour being the unquestionable property of the labourer, no man but he can have a right to what that is once joined to, at least where there is enough, and as good, left in common for others.¹¹⁷

The paragraph above mentions phrases, like, *labour of his body* and *work of his hands*, and *man, he*, which indicates that the theory is based on human labour. Frankly, it is not surprising that John Locke was referring to human labour, as, of course, there were no AI machines, systems or programs then. Animals are also not mentioned in John Locke’s explanation, and knowing that during the times of 17th century (time when John Locke lived) animals were

¹¹¹ Hilty, Hoffmann, and Scheuere, pp. 4-6, *supra* note 74.

¹¹² *Ibid.*

¹¹³ *Ibid.*

¹¹⁴ Nathan Pelgrims, “Work without author: Lockean theories of intellectual property and the product of artificial intelligence,” *University of Gent*, accessed April 3, 2024. Available on: https://libstore.ugent.be/fulltxt/RUG01/003/007/447/RUG01-003007447_2021_0001_AC.pdf.

¹¹⁵ *Ibid.*, p. 24.

¹¹⁶ Hilty, Hoffmann, and Scheuere, pp. 4-6, *supra* note 74.

¹¹⁷ Pelgrims, pp. 11-12, *supra* note 114.

definitely not considered as any rightsholders, it is clear that they could not have been meant there anyway.

Nevertheless, it seems that labour theory could be the one out of all three which, theoretically speaking, could be applied towards AI products in terms of justification, as AI machine or a robot is also *working* and performing some activities, which can be called labour.

Personality theory has a very much similar idea to the essence of a copyrightable work.¹¹⁸ Namely, it is based on a notion that

generating something and making it accessible to the general public is an expression of personality, which is assumed to rely on a person's interaction with external objects.¹¹⁹

As can be deduced from the name of the theory, it advocates for the fact that a creator has *put a piece of himself*, of his personality and character in the work he created, therefore it is logical that he has an ownership right over that piece of work. It is the most self-evident justification theory also from the *pro human author* point of view, as for now AI machines do not have personality (as was discussed in the previous chapter), which makes it impossible to justify IPR protection of AI products based on this theory.

Next theory is the reward theory, which proclaims that “it is fair to give someone a reward for enriching society.”¹²⁰ It specifically highlights that if one makes something for the benefit and utility of society, that person deserves a reward for that – IPR grant and protection.¹²¹ This theory puts emphasis in its justification on the fact that a person deserves his ownership rights not simply because he made something, but because he made something for the society.¹²² So, it seems like this theory differs from the other two, which primarily focus on the fact that ownership of an output comes from within the author himself, whereas for the reward theory it is a narrative that *one deserves something if he has done something for others*. This chain of reason maintains a utilitarian character and considerations, therefore it is more applicable to patent rights justification.¹²³ In case of patent protection, the reasoning behind this theory is explained by John Stuart Mill in a way that “the reward to the inventor was proportional to the ‘usefulness’ to consumers of the invention”.¹²⁴ The reward theory is focused around encouragement for more discoveries, inventions, etc. – so, further development and improvement.¹²⁵

The answer to the question whether IPR protection of an AI output could be justified by reward theory fairly depends on the essence of the reward mechanism.¹²⁶ Logically, a human can appreciate a reward, because he has put some certain effort into making an IP protectable product, thus, psychologically, it feels like bargaining. AI, on the other hand, does not have feelings or emotions, thus, it is fair to say that AI works irrespective of some sort of motivation. AI does not *care* about being a rightsholder – the machine works, because it is programmed to work. Therefore, while the mere fact that AI could, theoretically, produce an output, which would be beneficial for society, can stand, it is not sufficient to say that it is reasonable to base

¹¹⁸ Hilty, Hoffmann, and Scheuere, p. 5, *supra* note 74

¹¹⁹ *Ibid.*

¹²⁰ *Ibid.*, p. 6.

¹²¹ *Ibid.*

¹²² *Ibid.*

¹²³ *Ibid.*

¹²⁴ Peter S. Menell, “1600 INTELLECTUAL PROPERTY: GENERAL THEORIES,” *In Encyclopaedia of Law and Economics* (2000): p. 132, accessed March 2, 2024, <https://core.ac.uk/reader/7280110>.

¹²⁵ *Ibid.*

¹²⁶ *Ibid.*

IPR protection of AI works on the reward theory, as that IPR reward must be appreciated in order to work.¹²⁷

On the other hand, if, in case of patents, one considers that the reward theory emphasizes that “the patent system should focus upon rewarding only those inventions that would not be forthcoming (or would be substantially delayed) without patent protection”¹²⁸, thus, at focus should be just the invention itself and how beneficial for the society it is, then it would sound fair to justify the protection of AI-generated output. Though, as has been discussed earlier, the issue with granting a patent for AI-output is not so much with the output itself, rather with a formality that the law does not allow an AI system to be put as *inventor* in a patent grant application.

To sum up the essence of each of the deontological justification theories, it can be said that all of them are centred around human authors and human inventors, thus, the notion of each of the theories implies awarding IPR protection to human works. That is not surprising, considering that these theories were developed many centuries ago, when there was no sign of AI. Therefore, because the times are totally different now, it does not seem rational to decline justification of IPR protection of AI outputs only because these ancient theories do not include a term *AI*. Nevertheless, these theories serve as a normative base for legal framework, and there are other devices that did not exist earlier, like, camera and computers, though, protection of subject-matters that can be created using them is justifiable. Hence, the issue is with specifics of AI and not with the theories.

Meanwhile, in regard to AI-assisted output, the conclusion is similar to the one that was made in the first chapter when discussing copyrightability and patentability of AI-assisted outputs. “As long as there is a sufficient ‘human link’, labour is conducted, a reward deserved, personality expressed.”¹²⁹ That said, so long as there is sufficient level of human involvement – that is, when AI is used under human guidance as a tool –, IPR protection for AI-assisted output can be justified with the aforementioned theories.

2.2 Utilitarian justification of IP rights for AI works

Utilitarian justification is based on a more practical notion – meaning, it consists of various theories, which imply incentivizing creations and inventions and respective ownership rights through economic means.¹³⁰ There are several economic theories that can be divided into two branches – incentive theories and optimizing patterns of productivity theories.¹³¹ Incentive theories include general incentive theory and investment protection theory.¹³² Optimizing patterns of productivity theories include market opening theory, prospect theory and disclosure theory.¹³³

The general incentive theory maintains deontological and psychological notions.¹³⁴ This theory considers the grant of property rights over intangible goods the ultimate incentive to generate them.¹³⁵ Meaning, that the incentive is receiving the IPR protection. There are

¹²⁷ Menell, *supra* note 124.

¹²⁸ *Ibid*, p.146.

¹²⁹ Hilty, Hoffmann, and Scheuere, p. 9, *supra* note 74.

¹³⁰ *Ibid*.

¹³¹ *Ibid*, pp. 14-15.

¹³² *Ibid*.

¹³³ *Ibid*.

¹³⁴ *Ibid*.

¹³⁵ Hilty, Hoffmann, and Scheuere, pp. 16-19, *supra* note 74.

opposing views to such a simple statement, because, in reality, just having IPR has little value in comparison to “prospect of successful market opportunities”.¹³⁶ Of course, it can be put in a perspective that IPR protection mechanisms exist exactly because they facilitate prosperous opportunities for the rightsholders. Thus, it is doubtful that, what serves as an incentive for an inventor or a creator to make new works/inventions, is just the mere fact that they will *legally have their name on* those works. Therefore, many scholars believe that this theory is not fully convincing, as “[a] lack of market demand cannot be replaced by IP protection”.¹³⁷

Considering that general incentive theory is not very persuasive in respect to human authors or inventors, it feels even less compelling in the context of AI.¹³⁸ Similarly to some considerations mentioned in the previous sub-chapter about deontological justification theories, specifically, the reward theory, one must be responsive to incentives in order for this theory to work. Naturally, an AI machine, a program, a system or a robot is not conscious, therefore it *would not care* or, more precisely, *could not care* about receiving ownership rights and protection over its output. An AI machine works and will work irrespective of any incentives one has to offer.

At the same time, when AI is used as a tool by a human, one could say that, for the reasons discussed in the first chapter, that would be an AI-assisted output and the author or inventor is a human, thus, that output can enjoy IPR protection (if the human contribution is sufficient). However, there is a concern that the easier the creation or invention process becomes (thanks to the use of AI), the less appreciated the rewards or incentives become.¹³⁹ This view is explained with an assumption that

‘the mere action of pressing a button’ (which is the ultimate technological promise of AI) is certainly not in need of external motivation.¹⁴⁰

While “the mere action of pressing a button”¹⁴¹ will anyway not be considered a sufficient human contribution in the making of the final product, the point made by such example is that AI-assisted output fails to be justified under general incentive theory to obtain IP protection.

The investment protection theory is considered to be a more relevant and most common incentive justification theory.¹⁴² Its idea is quite simple and logical – legal protection, i.e., IPR protection, encourages investment, thus, promotes research and development.¹⁴³ This theory is more relevant in the context of patents, as the mechanism of this theory is more likely to happen towards a patentable output rather than a copyrightable one.¹⁴⁴

One can notice that this mechanism works in two connected ways. From one side, investors would not want to invest in a research if they knew that the outcome, the *revolutionary* results would not get legal protection and could be easily replicated, used for enrichment purposes by others, etc. without any return on investment to them.¹⁴⁵ However, since such IP legal protection mechanism exists, when investors see the potential in an idea that is about to

¹³⁶ *Ibid*, p. 15.

¹³⁷ *Ibid*, pp. 15-16.

¹³⁸ *Ibid*.

¹³⁹ *Ibid*.

¹⁴⁰ *Ibid*, p. 18.

¹⁴¹ *Ibid*.

¹⁴² *Ibid*, p. 19.

¹⁴³ Menell, *supra* note 124.

¹⁴⁴ *Ibid*.

¹⁴⁵ *Ibid*.

become an innovation if it is researched and developed, they are likely to invest.¹⁴⁶ Thus, for those who are the ones that actually work on the invention, that investment and the future protection works as a motivation to develop more and further, as now it is possible thanks to the resources provided.¹⁴⁷

Standard accounts of the patent system have emphasized several features of the law that promote economic efficiency: legal protection for invention encourages investment; disclosure requirements enhance technological knowledge and spur further research; incentives to develop and commercialize research rapidly diffuse advancements.¹⁴⁸

The investment protection theory emphasizes “appropriability of economic returns from investment as the driving force behind technological innovation”¹⁴⁹, thereby showing the practicality and, thus, the logic behind justification of IPR, especially for patentable works.

When analysing this theory in the context of AI, the biggest issue is that AI-generated output, cannot receive legal protection – protection being the main reason why it is worth for investors to make investment into research and development of the subject matter. Nevertheless, this theory does not really *care* about human character.¹⁵⁰ Yes, it works because a human reciprocates to investment/reward type of *gestures*, as it facilitates the process of research and development for that human, however, the point is that an investment is received to facilitate and promote creation or invention of something that is going to be protected and will bring return on investment. That said, if AI-generated output could get some sort of legal protection, and that output would constitute a valuable invention, investors would not care *who* is the one producing the invention. What matters is that the potential innovation is worth investing in knowing that it will be beneficial, will bring return on investment and will be legally protected with IPR.¹⁵¹ For now, that is a theoretical example, but what it shows is that investment protection theory could work in the context of AI-generated output.

The next branch of utilitarian justification theories is the category of theories related to optimization of patterns of productivity.¹⁵² The market opening theory, the prospect theory and the disclosure theory are based on a principle of “optimizing patterns of creative or innovative productivity via the creation of artificial scarcity”.¹⁵³ These theories are economically-centred.¹⁵⁴

That said, the general idea of market opening theory is that artificial scarcity of products created by IP regimes can contribute to enhancement of general welfare of society.¹⁵⁵ Meaning, creators and inventors are going to be more motivated to create and invent if they know that their rights and the product is going to be protected from unauthorized use.¹⁵⁶ Otherwise there would not be value in products that are plenty of and easily available to anyone, thus, no financial benefit from them, as everyone uses them for free.¹⁵⁷

¹⁴⁶ Menell, *supra* note 124.

¹⁴⁷ *Ibid.*

¹⁴⁸ *Ibid.*, p. 146.

¹⁴⁹ *Ibid.*

¹⁵⁰ Hilty, Hoffmann, and Scheuere, *supra* note 74.

¹⁵¹ Menell, *supra* note 124.

¹⁵² Hilty, Hoffmann, and Scheuere, pp. 23-27, *supra* note 74

¹⁵³ *Ibid.*, p. 23.

¹⁵⁴ *Ibid.*

¹⁵⁵ *Ibid.*

¹⁵⁶ *Ibid.*, pp. 23-24.

¹⁵⁷ *Ibid.*

Prospect theory explains that, essentially, no one wants patent protection *just because* – there is a value in it if it can bring income.¹⁵⁸ To clarify, if a lot of investment is made to develop a certain technological invention, it is logical that the investor would want to obtain patent protection, considering that the said invention will then bring them income.¹⁵⁹

Disclosure theory, on the other hand, carries a completely different point. It is closely connected with disclosure of the patent requirement, which obliges the inventor, who wants to receive a patent protection, to disclose the *recipe* of the invention when filling out the patent application.¹⁶⁰ Such a mechanism definitely reduces “uncoordinated inventive activity”,¹⁶¹ as well as promotes inventiveness in the society due to valuable knowledge being shared through disclosure of the patent.¹⁶² This theory justifies IPR protection based on the transaction that takes place between an inventor and the public – protection in exchange of disclosure of the information.¹⁶³ It can be said that AI invention would most likely fail to be subject for IP protection under this theory, as it is not possible to follow every step an AI system makes during production, thus, to disclose the *recipe* of the invention.¹⁶⁴

In conclusion, it can be summarised that all of the justification theories, especially, deontological ones, are based on a human’s personality, character. That is also the main reason why, for now, protection of AI-generated output fails to be justified under these theories. The author of this thesis believes that it makes sense because these theories were developed many centuries ago and because protection of solely non-human output does not fall within the essence of what is being protected with copyrights and patent rights.

As for copyright point of view, the subject matter is an intellectual creation, something that is unique because it contains a part of the personality of a human who created that, and because every human is not like others, it is not possible to have that same product created by anyone else. Therefore, it makes sense that such a creation can enjoy protection exactly because it is special, it did not occur randomly thanks to technical combinations that could have been *typed* by anyone, and because some level of effort was put into creation of that. This signifies that AI-generated output is not suitable for copyright protection based on deontological justification theories, which are fairly based on the points made in the previous sentence.

In regards to patents, as patentable inventions are technological subject matters, utilitarian justification theories, which mostly apply to patentable products, are not concerned with human personality being displayed in the subject matter *per se*, which makes them more *liberal* towards the idea of justification of AI-generated output. However, as was observed in this chapter, even though a human’s personality does not have to be reflected in the invention itself, the utilitarian justification theories are *built* in ways that work if there is a human recipient on the other end. Phenomena, like, incentives, reward mechanisms, etc. work only towards those who can reciprocate due to feeling of appreciation or need, or want. Because an AI machine does not have an emotional system, feelings, opinions, and other human features that would make it *care*, it is evident that protection of AI-generated output cannot be justified with these theories.

¹⁵⁸ Hilty, Hoffmann, and Scheuere, pp. 24-26, *supra* note 74

¹⁵⁹ *Ibid.*

¹⁶⁰ European Patent Convention, Article 83, *supra* note 60.

¹⁶¹ Hilty, Hoffmann, and Scheuere, p. 26, *supra* note 74.

¹⁶² *Ibid.*

¹⁶³ *Ibid.*

¹⁶⁴ *Ibid.*

However, as was established in this subchapter, the investment protection theory could work to justify AI-generated outputs if it was possible to receive some sort of legal protection for the output generated solely by AI.

As far as AI-assisted output is concerned, so long as there is sufficient input from the side of a human author or human inventor, depending on the type of product and the essence of deontological or utilitarian theory used, AI-assisted output could be justified.

3. RELEVANT COPYRIGHT AND AI ISSUES CASE-LAW ANALYSIS, TOPICALITY OF THE FINDINGS FOR BUSINESSES, AND RECOMMENDATIONS FOR POTENTIAL IP LEGISLATION IMPROVEMENTS OR NEW CONVENTIONS

3.1 Relevant copyright and AI issues case-law analysis

Getty Images (US) Inc. v. Stability AI, Ltd.

The first case that is going to be discussed is still in progress, although an interim hearing at the England and Wales High Court (EWHC) has already taken place and a summary judgement is available.¹⁶⁵ Although this case is not under the EU jurisdiction, it concerns a situation that is likely to happen quite a lot in the context of IP and AI. More precisely, it highlights the reasons 1) why it is questionable whether an AI machines can actually generate its own unique work, 2) why it is problematic for an AI machine to be held accountable and liable for IPR infringement, and 3) that should be considered by legal persons who work with AI machines for the purpose of creating an output.

While this case awaits a proper trial, the summary judgement already contains significant points made by the Court, as to why the claimant was right to raise a claim against the defendant in the context of copyrights, which means that there is a high likelihood of success for the claimant in the trial (other IPR infringements are mentioned too, but the author of the thesis will concentrate only on copyrights for the purposes of this sub-chapter).¹⁶⁶ This case is not going to be analysed in detail, rather the key facts of the case will be observed in order to understand different issues that can happen when an output is created using AI.

The main facts of the case are that a company Stability AI, Ltd. has an AI robot called Stable Diffusion that creates visual outputs (images).¹⁶⁷ During the training process of the robot that was done by Stability AI, different images, including the images of Getty Images (US) Inc. were used.¹⁶⁸ This aspect is very important, because the training phase of any AI program, tool, machine, robot and any other system is the most crucial part, as the following output depends on the input.¹⁶⁹

As claimed by the Getty Images (US) Inc., Stability AI, Ltd.

"scraped" millions of images from the Getty Images Websites, without the Claimants' consent, and used those images unlawfully as input to train and develop Stable Diffusion; further that the output of Stable Diffusion in the form of synthetic images (accessed by users in the United Kingdom) is also itself infringing in that it reproduces a substantial part of the Copyright Works and/or bears the Trade Marks.¹⁷⁰

The issue was that the output produced by Stable Diffusion visibly depicted parts or patterns of Getty Images (US) Inc. copyrighted images, as well as displayed their logo in some images.¹⁷¹

¹⁶⁵ EWHC 3090 (Ch), 1 December 2023.

¹⁶⁶ *Ibid*, para 1.

¹⁶⁷ *Ibid*.

¹⁶⁸ *Ibid*, paras 6, 8.

¹⁶⁹ Gervais, *supra* note 32.

¹⁷⁰ *Supra* note 165, para 8.

¹⁷¹ Generative AI in the courts: Getty Images v. Stability AI. Available on: <https://www.penningtonslaw.com/news-publications/latest-news/2024/generative-ai-in-the-courts-getty-images-v-stability-ai>. Accessed May 6, 2024.

One infringement example of many that Getty Images (US) Inc. provided in their complaint can be seen below:



Figure 3. 1. On the left, the original watermarked image of Getty Images. On the right, the output of Stability AI¹⁷²

Though the facts of the case go deeper, this case shows how crucial from a legal perspective it is to train AI machines thoroughly. To add, for now, because generative AI is still a very new phenomenon, it is not possible to always know that the output of an AI machine will always be unique enough to not cause copyright infringement.¹⁷³ It requires long training process with huge amount of data.¹⁷⁴ While, undoubtedly, there are more developed and better working AI machines than Stable Diffusion, because for legal purposes AI needs to be treated as one whole segment (same as humans should be treated equally), this case shows that it is too soon or unreasonable to grant copyrights to AI machines, as further development and research is much required. It is true that humans can also infringe copyrights of others, either purposefully or not. However, in case of AI, that happens because of lack of sufficient training, and because anyway the output of any AI machine is really a reproduction of existing pieces.¹⁷⁵ Furthermore, this case also shows that, because an AI robot cannot be held liable legally, it is the company that faces charges. Therefore, another conclusion from this case is that companies must be very careful with work that has been created with the help of AI and which the companies are using.

S. Š. v. TAUBO LEGAL

This case deals with the two most popular copyright and AI related questions. Namely, whether any output created with the assistance of an AI program can be copyright-protected, and who

¹⁷² COMPLAINT filed with Jury Demand against Stability AI, Inc, filed by Getty Images (US), Inc., p. 18, available on: <https://docs.justia.com/cases/federal/district-courts/delaware/dedce/1:2023cv00135/81407/1>. Accessed May 5, 2024.

¹⁷³ Ramalho, *supra* note 5.

¹⁷⁴ Gervais, *supra* note 32.

¹⁷⁵ *Ibid.*

is the author in such a case.¹⁷⁶ The case was heard in Czech Republic, in the Municipal Court in Prague.

The Municipal Court in Prague addressed the question of whether a person can be identified as the author of a graphic created by means of artificial intelligence and claim all of the rights related thereto.¹⁷⁷

The facts of the case revolve around a plaintiff, who is a natural person and who used an AI program DALL-E to generate an image for their website.¹⁷⁸ The defendant, on the other hand, is a law office that used the said image for their own website by copying it.¹⁷⁹ Consequently, the plaintiff accused the defendant of copyright infringement due to “publishing the plaintiff’s graphics on its website without the plaintiff’s consent”.¹⁸⁰ Therefore, the plaintiff asked the Court to declare the plaintiff as the author of the image based on Article 40(1) of Act No. 121/2000 Coll., on Copyright, on Rights Related to Copyright and on Amendments to Certain Acts (CA), as well as to order the defendant to remove the image from their website and “an injunction against any further conduct that might jeopardize or otherwise interfere with the plaintiff’s rights as author”.¹⁸¹ The action was dismissed on all counts by the Court.¹⁸² The reasoning of the Court contains points identical to the ones that were discussed in the first chapter of this thesis, where the essence of a copyrightable *work* and an *author* was analysed.¹⁸³

It is important to mention the exact request that the plaintiff made when putting in the instructions regarding the image for DALL-E. The exact wording in Czech was:

Vytvoř vizuální zobrazení dvou stran, které podepisují obchodní smlouvu ve formálním prostředí, například v konferenční místnosti nebo v kanceláři advokátní kanceláře v Praze. Ukaž pouze ruce.¹⁸⁴

The English translation of this instruction is:

Create a visual representation of two parties signing a business contract in a formal setting, such as a conference room or a law firm in Prague. Show only their hands.¹⁸⁵

There are three main conclusion points made by the Court. First, in regards to question about authorship, the Court concluded that the plaintiff failed to prove the significance of their involvement during the creation process – that the image was created based on the plaintiff’s specific input/request.¹⁸⁶ To clarify, the logics behind this burden of proof is to show that, technically, anyone can make a fairly vague request for an AI program to implement, but that is not enough to claim authorship. It is not enough, because how can one be sure, who actually entered this vague sentence-request that resulted into a non-specific image.¹⁸⁷ Therefore,

¹⁷⁶ Czech court finds that AI tool DALL-E cannot be the author of a copyright work. Available on: <https://ipkitten.blogspot.com/2024/04/czech-court-finds-that-ai-tool-dall-e.html> Accessed May 4, 2024.

¹⁷⁷ Peterka partners. Graphics created by artificial intelligence as work of authorship. Available on: <https://blog.peterkapartners.com/graphics-created-by-artificial-intelligence-as-work-of-authorship/> Accessed 4 May, 2024.

¹⁷⁸ *Ibid.*

¹⁷⁹ *Ibid.*

¹⁸⁰ Municipal Court in Prague, judgement No. 10 C 13/2023-16 of 11 October 2023, para 1. *Author’s own English version translated via DeepL translator. Original judgement in Czech available on: https://justice.cz/documents/14569/1865919/10C_13_2023_10/.

¹⁸¹ Peterka partners, *supra* note 177.

¹⁸² *Ibid.*

¹⁸³ Peterka partners, *supra* note 177.

¹⁸⁴ *Supra* note 180, *original text of the judgement in Czech.

¹⁸⁵ *Ibid.*, *translated English version.

¹⁸⁶ *Ibid.*, para 5.

¹⁸⁷ Peterka partners, *supra* note 177.

apparently, there must be some sort of documentation of the process to prove, who asked the AI program to perform and how exactly.¹⁸⁸ Some scholars say that

[s]uch evidence could have been, for example, a notarized notation with a screen shot showing the input entered into DALL-E as alleged in the petition, together with the subsequent output generated by the AI.¹⁸⁹

In the present case, “the plaintiff stated that he did not have any other evidence to submit beyond his statement,”¹⁹⁰ and, as a result, the Court found that it is not sufficient to prove authorship.

Second conclusion point concerns the fact that the graphic created by an AI program cannot be qualified as a *work* under Article 2 of the CA.¹⁹¹ The aforementioned section establishes identical prerequisites, as those analysed in the first chapter, for an output to be considered a copyright-protected *work*.¹⁹² The Court stated that the graphic in question does not meet these requirements, as that output is not a unique product resulting from creative activity of its author.¹⁹³

Finally, the third conclusion point made by the Court emphasized that only a natural person can be an author.¹⁹⁴ However, since the Court established that the plaintiff cannot be considered an author of this particular image, and neither can an AI program, this was another issue the Court identified in the context of authorship.¹⁹⁵

Subsequently, the Court noted that the image created by an AI program DALL-E at the request of the plaintiff was not a work of authorship, and not the plaintiff’s work.¹⁹⁶

This judgement of the Municipal Court in Prague is definitely significant, because the main legally challenging AI and copyright issues were once again highlighted. It cannot be said that it is totally unclear how to handle such cases, although there is no law covering the issues mentioned in the case. However, there is a more or less unified approach among States regarding necessity of human involvement in the process of creation of a work, the level of originality and reflection of a human-author’s personality in the work, which was brought up in the present case as well. Hence, hopefully more and more similar judgments appear to strengthen approach and verdict patterns in cases concerning copyright issues when an output was created using AI.

LI v. LIU

This judgement contains an opposite ruling, despite the facts of the case being fairly similar to *S. Š. v. TAUBO LEGAL*. While this is not a European case, it is relevant as it depicts quite a classic situation in the realm of copyright issues resulting if an output was created with the help of AI, and it provides a perspective where, contrary to the previous case, the output was granted

¹⁸⁸ *Supra* note 180, para 5.

¹⁸⁹ Peterka partners, *supra* note 177.

¹⁹⁰ *Supra* note 180, para 5.

¹⁹¹ *Ibid*, para 7.

¹⁹² Article 2(1) of Act No. 121/2000 Coll., on Copyright, on Rights Related to Copyright and on Amendments to Certain Acts. Available on: <https://www.wipo.int/wipolex/en/legislation/details/22298>.

¹⁹³ *Supra* note 180, para 12.

¹⁹⁴ *Ibid*, para 9.

¹⁹⁵ Peterka partners, *supra* note 177.

¹⁹⁶ *Supra* note 180, para 12.

protection and an author was acknowledged.¹⁹⁷ Because the points that the Chinese court analysed to decide on the case are the same as the main issue points highlighted in this thesis, the judgement is going to be analysed based on those determinations and not on Chinese law, which would not be relevant for the thesis.

The facts of the case show that the plaintiff, a natural person, used the Stable Diffusion open-source software to create an image that the plaintiff named “Spring Breeze Brings Tenderness”¹⁹⁸ and shared on a social platform later on.¹⁹⁹ The defendant, also a natural person, used this image and posted it in an article.²⁰⁰ Consequently, the plaintiff claimed authorship infringement.²⁰¹ The case was heard in the Beijing Internet Court, and the image was recognized to be copyright protectable and the plaintiff – as the author.²⁰² Thus, the defendant did infringe the plaintiff’s authorship by using the image for their public article.

The image in question is:



Figure 3.2. Plaintiff’s AI-generated image “Spring Breeze Brings Tenderness”²⁰³

To come to the decision, the Court assessed three main issues: “the plaintiff’s intellectual investment, the originality of the image, and the ownership of copyright.”²⁰⁴

In regards to plaintiff’s intellectual investment (as discussed in the first chapter, this point is about the output reflecting intellectual choices made by the author), the Court pointed out that from the start of the creation process till the end result

¹⁹⁷ Beijing Internet Court, Beijing 0491 Republic of China No. 11279, November 2023, p. 22. *Author’s own English version translated via Google Translate. Original judgement in Chinese available on: <https://mp.weixin.qq.com/s/>.

¹⁹⁸ *Ibid*, p. 11.

¹⁹⁹ *Ibid*, p. 2.

²⁰⁰ *Ibid*.

²⁰¹ *Ibid*, p. 1.

²⁰² *Ibid*, p. 22.

²⁰³ Seagull Haiyan Song, “CHINA’S FIRST CASE ON COPYRIGHTABILITY OF AI-GENERATED PICTURE,” available on: <https://www.kwm.com/cn/en/insights/latest-thinking/china-s-first-case-on-copyrightability-of-ai-generated-picture.html>. Accessed May 9, 2024.

²⁰⁴ Hongxia Wu, “China’s first AI-generated image copyright infringement case,” available on: <https://www.lexology.com/library/detail.aspx>. Accessed May 2, 2024.

the plaintiff made certain intellectual inputs during the whole process, such as designing the presentation of the characters, choosing the cue words, arranging the order of the cue words, setting the relevant parameters, and selecting the image that conforms to the expectation, etc. The image involved in the case reflected the plaintiff's intellectual investment, so the image involved in the case met the requirements of 'intellectual investment'.²⁰⁵

Consequently, it can be said that the request was complex and detailed enough to reflect a significant intellectual effort from the plaintiff made during the production process, which is visible in the final product – the image.

As to originality, the Court found that

the plaintiff designed the characters and their presentation and other elements of the picture through the prompts, and set the parameters for the layout and composition of the picture, reflecting the plaintiff's choices and arrangements.²⁰⁶

The Court continued by stating that, because there were multiple versions of the image till the final version, which were all modified by the plaintiff through different adjustments in colour, shape, and other parameters, it is clear that the image in question is not just a "mechanical work".²⁰⁷ Thus, the image meets the originality criterion.

Next, the Court assessed ownership of copyright.²⁰⁸ The Court had already established that the output is considered to be a *work* that can enjoy copyright protection, as there is sufficient proof of detailed intellectual and creativity input from the plaintiff's side, therefore the used AI program was merely a tool that helped with embodying.²⁰⁹ Considering that an AI program anyway cannot be acknowledged as an author, and the said image was "directly generated based on the plaintiff's intellectual input and reflects the plaintiff's personalized expression"²¹⁰, the Court decided that the plaintiff is an author of the image.²¹¹

The difference between this case and *S. Š. v. TAUBO LEGAL* in terms of the courts' decisions appears to depend on the complexity of the request to the AI programs made by plaintiffs, as well as sufficient provable effort from a human-author's side during the production process. Thus, the uniqueness and author's personalized expression reflected in the output is ensured. That said, it is evident that qualification of outputs as *works* and human-authors as *authors*, when an AI program was used to help with creation, depends on the specifics of each case.

3.2 Topicality of the findings for businesses

It is quite logical that a huge industry that benefits from the use of AI, as well as suffers from implications related to it, is business.²¹² Therefore, the reasoning as to why there is a certain topicality of IP issues in the context of AI for businesses is quite evident. Businesses are developers and they are *acting fast and big*, therefore, because AI is becoming a major player

²⁰⁵ *Supra* note 196, p. 17.

²⁰⁶ *Ibid*, p. 18.

²⁰⁷ *Ibid*, pp. 18-19.

²⁰⁸ *Ibid*, p. 20.

²⁰⁹ *Ibid*.

²¹⁰ *Ibid*, p. 22.

²¹¹ *Ibid*.

²¹² Ramalho, *supra* note 5.

and a tool in different daily operations, there are a lot of points to keep in mind, including those related to IP.

As was discussed in the previous chapters, there is no specific regulation governing IP issues in relation to AI in copyrights. Moreover, AI field is growing rapidly day by day, and there is also truth in saying that some aspects in the context of AI that are *true today* might not be *true tomorrow*.²¹³ For now, those two are the main reasons why it is very difficult or, frankly, quite impossible to make any precise and strong suggestions or recommendations. Considering that the realm of AI at such a powerful level is very new, all issues are new as well, and are being dealt with on a case-by-case basis. Therefore, it is important to keep in mind that while there are some court judgements, and some logical considerations that can be deduced from existing IP laws, not a lot legally certain and binding can be said for now in relation to IPR for works that have been created or inventions that have been invented by an AI robot, machine, program, or any other AI system.

Nevertheless, there are some practical aspects that shall be paid attention to and which can be helpful to businesses in order to protect their IPR.²¹⁴ It is clear that the use of AI technology in businesses is growing with speed, therefore some implications related to the impact of AI use on a business's IPR matters arise too.²¹⁵ It appears that there are two business objectives that contribute to IPR issues linked to AI. Those being: 1) maintaining a freedom to operate and at the same time not violating IPR of third parties, 2) and protecting their AI research and development investments.²¹⁶

Businesses that incorporate AI technology as part of product or service offerings should ascertain the scope of the IP landscape to respect the boundaries of potential third-party claims that could place them at risk.²¹⁷

This is relevant in different cases. For instance, as was observed in the case *Getty Images (US) Inc. v. Stability AI, Ltd.* in the previous sub-chapter, if a company uses certain AI programs that produce some output, the company must make sure that this output is not copyright or any other IPR infringing. Of course, that is probably an issue arising out of negligent or not thorough enough training and input of data at the stage when an AI machine is trained and prepared. However, as regards the output, companies must be aware, what product that has been produced with the help of an AI machine they use for what purpose, in order to safeguard themselves from potential IPR infringement claims from third parties.

Furthermore, it is logical that businesses want to protect the investment they made to contribute to the development of AI in IP field, resulting in some protectable works or inventions.²¹⁸

²¹³ H. Jaakkola, Jaak Henno, J. Makela, Bernhard Thalheim, "Artificial Intelligence Yesterday, Today and Tomorrow," *Conference: 2019 42nd International Convention on Information and Communication Technology, Electronics and Microelectronics (MIPRO)*, accessed May 3, 2024, doi:[10.23919/MIPRO.2019.8756913](https://doi.org/10.23919/MIPRO.2019.8756913)

²¹⁴ Frank A. DeCosta III, Ph.D., "Intellectual Property Protection for Artificial Intelligence," *Westlaw Journal Intellectual Property*, (2017), accessed 2 May, 2024. <https://www.finnegan.com/en/insights/articles/intellectual-property-protection-for-artificial-intelligence.html>.

²¹⁵ Ramalho, *supra* note 5.

²¹⁶ DeCosta, *supra* note 214.

²¹⁷ *Ibid*, p. 1.

²¹⁸ DeCosta, p.1, *supra* note 214.

Due to low cost, high-capacity storage and computing power, and the ubiquity of sensors that capture data of all types, companies are adding AI features to existing products and creating entirely new product offerings based in AI.²¹⁹

Taking into account the possibilities that the use of AI can offer, it would seem unreasonable not to use AI tools which can greatly contribute to creation or invention of something truly beneficial. Therefore, many businesses invest in different projects or conduct research and development themselves.²²⁰ Thus, as was discussed in the second chapter about utilitarian justification theories, specifically, investment protection theory, – naturally, those who invest want to have security over the potential work or invention in terms of ownership rights, and that work or invention being protected. For businesses the three biggest IP areas would be patents, trade secrets and copyrights (for the purposes of this thesis, the author will focus on patents and copyrights only).²²¹

A few of the main topicalities for businesses related to IP in AI context can be deduced from everything that has been observed in the previous chapters. Among those are inventorship issues, patent disclosure issues, and patent-eligible or copyright-eligible subject matters.²²²

As was discussed earlier, inventorship issues when a subject matter has been invented by AI arise due to the fact that an AI robot does not have a legal capacity. That creates formalities, which preclude an AI machine to be entered as an inventor in the patent application to acquire a patent protection. Therefore, businesses must keep in mind that for now, even in the event where a company would want their AI machine to be acknowledged as an inventor, that is not legally possible, as confirmed by the court's reluctance in the DABUS case.²²³ Thus, it is important to remember that currently only a natural person can be an inventor.

Patent disclosure issues are worth mentioning because if a company wants to acquire a patent, it is crucial to be able to disclose *the recipe*. Hence, as was already highlighted previously, the reason why AI produced invention fails to comply with the disclosure justification theory and Article 83 of the EPC is because it is hard or sometimes even impossible to follow every detailed step an AI machine performs till it produces the final output. Nevertheless, this aspect is very important in order to be granted a patent. Therefore, it is in the interest of businesses to take notes and be familiar with the work process of their AI machine, so that it is possible to fulfil the said disclosure criterion, when asked about the invention recipe.

To continue, there must be an understanding of patent-eligible or copyright-eligible subject matters.²²⁴ The reasoning for that is very simple yet important, – so that companies are aware of what output that they produce with the help of AI can actually be IP-protected.²²⁵ This might be especially relevant in copyright-related conflict situations, where one company decides to raise a copyright infringement claim against another. As analysed throughout this thesis, there is no 100 per cent certainty in all cases whether a specific work that was created with the help of AI is a copyright-protectable work. A precise case example confirming this is the previously analysed Czech judgment for the case *S. Š. v. TAUBO LEGAL*.

²¹⁹ *Ibid.*

²²⁰ *Ibid.*

²²¹ *Ibid.*

²²² *Ibid.*

²²³ UKSC 49, (2023), paras 96-99.

²²⁴ DeCosta, pp. 2-3, *supra* note 214.

²²⁵ *Ibid.*

To add, there already exist some soft law materials, like, guidelines and recommendations, similar to the four step test offered by the EC that was discussed in the first chapter, that can be followed or used to avoid infringement-constituting actions and receive some answers or suggestions for action.²²⁶ Being familiar with relevant case-law is also beneficial.

3.3 Recommendations for potential IP legislation improvements or new conventions

Throughout this thesis many aspects were observed that are relevant to copyright issues concerning authorship and whether an output can be qualified as a *work* when a product was created with an assistance of an AI program. The main component that underlines originality, creativity, personality, intellectual effort, and other requirements that have been discussed, is the involvement of a human during the production process. Moreover, the formulation of different copyright-related articles and justification theories that have been observed, as well as judgements providing courts deliberations, incline that only a human can be an author and a certain threshold of human involvement when creating a work must be achieved.

Consequently, the author of this thesis has come to a conclusion that a phenomenon as AI-generated output by default is not compatible with the existing laws and an AI program cannot be an author. Hence, considering the rapid development of AI field, there will definitely be a high necessity for a law that would regulate AI-generated outputs in the future.

To clarify, the author of the thesis does not believe that the solution is granting copyright to AI *per se*. The author is not sure whether a new regulation that would lay down articles allowing AI programs and tools to be authors and solely mechanical outputs be considered *works* is necessary, as it would go against the essence of why copyrights exist and why it makes sense for humans to be authors. While AI has developed so far that it can create products that, from the first glance, seem to be the same as those created by humans, it does not mean that AI must enjoy ownership rights in the same way as humans. The author of the thesis shares the same view as many scholars that the main reason for it is that an AI program is not capable of appreciating those rights – granting copyrights to AI will not motivate AI or make any other impact on it, therefore such action loses the point.²²⁷ To add, giving copyright protection to purely technical outputs seems pointless too, because copyright protection does not exist so that it is possible to protect anything – it exists to protect unique, not random, personal, authentic outputs.

As to AI-assisted output, the author has come to a conclusion that a helpful solution would be a development of thorough guidelines that would stipulate the aforementioned *thresholds* for sufficient human input. It appears that copyright and AI cases require individual assessment, because there are many circumstances that can impact the final determination. Therefore, the author believes that once there is a solid base of court judgements, it is going to be possible to develop a detailed scheme and instruction that courts could use and society be aware of when it comes to outputs created with the help of AI.

²²⁶ P.G Picht, F. Thouvenin, “AI and IP: Theory to Policy and Back Again – Policy and Research Recommendations at the Intersection of Artificial Intelligence and Intellectual Property,” *IIC* 54, (2023): p. 919, accessed April 23, 2024. <https://doi.org/10.1007/s40319-023-01344-5>.

²²⁷ *Ibid*, p. 921.

Therefore, while this is definitely a debatable matter, the author believes that copyright protected works shall remain those created solely by humans or with assistance of AI but merely as a tool. The rest of the outputs, which are either completely AI-generated or AI-assisted but with almost non-existent human involvement, shall be copyright-free. For the sake of clarity, when such outputs are published and used for purposes requiring some reference as to where that output comes from, it can be indicated that this is an AI-generated content.

In case of patentable inventions and inventors when AI has been involved, the observed situation is different. As was discussed, there is no requirement for human input to be reflected in the invention. While patent law rules are human-oriented, it is not because the product itself needs to have its inventor's personality features that would make it a patentable invention. The need for human comes only at a point where an inventor must be indicated in the patent application. Hence, there are no issues with patentability of AI inventions from the point of merit or substance, rather with formalities like patent application, as confirmed by the DABUS case.²²⁸ Therefore, the author of the thesis agrees with a view of scholars who believe that

[t]he law should be amended to allow the designation of AI systems as inventors. Meanwhile, patent applications should be free to designate persons as 'proxy inventors' while also describing the inventive activity of the AI system.²²⁹

It makes sense for such option to exist, because when AI generates an invention without inventive contribution from a human, it should be allowed to state so in the patent application, and indicate that the inventor is in fact the AI system, "along with a natural person or legal entity who claims ownership of the patent application and a resulting patent."²³⁰ Till the moment when laws are amended to permit such a recommendation, a temporary mechanism where natural persons are allowed to register as proxy inventors disclosing the AI system and their own role in the description sounds to be a reasonable proposal.²³¹ The permission to indicate AI as inventor is rational so far it does not preclude other requirements to be met, e.g., disclosure of the patent.

For the reasons discussed above, the author of the thesis believes that there is no need for a new regulation or convention concerning copyrights when a work was created using AI. However, some binding thorough guidelines and rich, harmonized case-law will greatly contribute to clarity on this matter. In regards to patent rights and inventorship, the author believes that law amendments allowing AI systems to be recognized as inventors would be a proposal worth exploring.

²²⁸ Picht and Thouvenin, p. 919, *supra* note 223.

²²⁹ *Ibid.*

²³⁰ *Ibid.*

²³¹ *Ibid.*

CONCLUSION

The aim of the thesis has been achieved – the author has explored copyright and patent right protection for creative works and inventions produced by AI, as well as identified the relevant legal issues, which require attainment from businesses' and legislators' side.

To achieve that, the author followed the objectives set for the thesis.

Firstly, the author analysed the concept of a copyright-protected work and patentable invention, as well as the two AI output kinds. It was done by examining articles of the relevant legal acts, like, Berne Convention, TRIPS Agreement and EPC, as well as the definitions provided by the CJEU in its judgements, and academic literature on the topic. The differences of the two output kinds, which are AI-assisted and AI-generated, as well as protectability of the outputs, was explored through analysis of excerpts of the CJEU judgements, and a soft law material – guidelines proposed by the EC.

Secondly, the author examined two deontological and five utilitarian IPR justification theories. The author analysed each of the theories to observe the essence of existing copyright and patent right protection justification and see whether and how AI output could be potentially justified by these theories to be granted patent or copyright protection. The discussion was based on scholarly articles about the theories, as well as the author's own views.

Thirdly, the author discussed the relevant court judgements, established topicality of the findings for businesses, and provided recommendations for potential IP legislation amendments or new conventions. Three significant court judgements about copyrights when a work was created with the help of AI were delved into in order to assess the court practice in such cases, as well as deduce the legal loopholes and implications. Topicality of the findings for businesses was summarised based on the authors observations throughout the research, as well as journal articles regarding the matter. Finally, the author reflected on what would be the most reasonable and fitting legal framework for works and inventions that are AI-generated or AI-assisted output, and proposed recommendations for potential IP legislation improvements. The reflections and recommendations were based on the observations made throughout the writing of the thesis.

The legal research questions were: 1) What is the justification for conferring intellectual property right protection, specifically, for copyrights and patent rights? 2) Does this justification apply also to works and inventions produced by the use of AI? 3) What areas of the legal framework require improvements to address the emerging challenges from the use of AI in creative works and inventions?

The author concluded that:

- 1)
 - a. Justification that underlines conferring copyrights is based on the features and requirements for protectable creative works, which are also more precisely defined by the CJEU. Specifically, a work is going to be copyright-protected if it is of artistic or literary nature, and it must be original and creative, thus, reflecting its author's intellectual effort and personality. The justification lies in the fact that a work is an author's creation containing part of his/her personality, that is a result of the author's labour, and this work has brought value to the society. Thus, it is fair to grant protection for the said work.

- b. Justification that underlines conferring patent rights lies in the value the invention and its protection brings. It advocates that inventors are more motivated to invent knowing that the innovation is going to be secured with a patent. A similar logic is also from investors' point of view, who want to invest in research if the result – protected invention – is going to be financially beneficial. There would not be use of patent right protection mechanism if the rights could not be monetized. Inventors would not be motivated to invent and investors – to invest in development, if they knew that the invention is going to be instantly available to anyone for free and in large.
- 2)
- a. In case of works that deserve copyright protection, AI-generated output fails to be justified as entitled to copyright protection, because it does not reflect a human's personality or intellectual effort, as it is created solely by AI. As to AI-assisted output, it appears that copyright protection of it can be justified so long as there is sufficient input from a human's side during the process of creation.
 - b. In case of inventions, there is no need for them to reflect a human's input. Nevertheless, it is evident that AI cannot respond to incentive mechanisms, as it does not have emotional system that would respond. AI works irrespective of any motivational factors. Consequently, from the point of justification theories, incentivisation aspect would not work in respect to AI, whereas monetization – would, as patentability requirements (novelty, inventive step, industrial applicability) are not concerned with the nature of the inventor – be it a natural person or a robot. However, because procedure of securing a patent protection involves application for a patent grant, which requires indication of the inventor, who can only be a natural person, purely AI-generated inventions fail to be subject for patent protection. Moreover, there would also be implications with fulfilment of disclosure requirement if an invention was invented purely by AI.
- 3) There is no need to amend the existing copyright laws in order to protect all AI output and be able to recognize AI as an author, because it goes against the essence of copyright protection justification. Whereas with patents, it was established that there are no issues with AI being an inventor in terms of patentability requirements for inventions against the backdrop of the dominant patent protection justification theories. Hence, it seems reasonable to amend legal acts precluding AI from being indicated as an inventor, so far it is possible to meet other patent grant requirements, like, disclosure of the invention.

In the beginning of writing of the thesis, the author believed that it is a pre-condition for a human's involvement to be reflected in a work or invention for both, copyrights and patent rights, to be granted. The author also thought that it would make sense to pass a new legal act allowing AI to be recognized as an author, as well as all creative output to be copyright protected. However, now, having researched the topic and observed the essence of copyrights and patent rights, as well as the concepts of work and invention, the author reached the conclusions expressed above.

The research on the topic can be continued by examining more CJEU judgements in order to gather a solid material of the Court's views and statements in different cases, which would facilitate clarity and be useful in disputes due to copyright infringement when a work was created using AI. It may also be helpful to explore national copyright laws to establish

similarities of the stance of the countries and loopholes that might be relevant in disputes occurring because of a supposed copyright infringement when a work was created using AI.

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