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Evolution of Copyright in the Era of Artificial Intelligence: Analysis of Conflicts of Law and Judicial Precedents

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Keywords

artificial intelligence,
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Abstract

Objective: a comprehensive critical analysis of the modern legal regulation of artificial intelligence technologies arising at the junction of intellectual property and artificial intelligence norms. Special attention is paid to the study of conflicts between existing European copyright legislation and new technological realities.

Methods: the work uses an interdisciplinary approach, including historical, formal-legal and comparative-legal research methods. The historical method allowed tracing the evolution of legislative and doctrinal approaches to intellectual property regulation in the era of digitalization. The formal-legal method made it possible to conduct a detailed analysis of the legal norms of various states. The comparative-legal method provided an opportunity to compare different approaches to regulating relations in the use of artificial intelligence for creative activities.

Results: the study examines the issues of copyright for works created using artificial intelligence, including complex aspects of determining authorship, as well as the issues of anthropocentrism in modern legislation. The author analyzes judicial precedents, mainly in the context of the European Union legislation, which is actively adapting to new technological challenges. Various approaches are investigated to determine the legal status of works created using artificial intelligence and their impact on traditional intellectual property concepts.

Scientific novelty: the article presents a unique comprehensive assessment of the impact of the AI creative capabilities on the fundamental intellectual

property concepts. The scientific significance lies in the author's original assessment of the impact of artificial intelligence technologies on copyright legislation, based on a detailed analysis of judicial precedents and doctrinal approaches. The author investigate the prospective development of legal regulation in the context of technological progress.

Practical significance: the paper proposes legal and governmental solutions aimed at creating a balanced and effective intellectual property regime in the era of artificial intelligence. Recommendations were developed to improve legislation, taking into account existing judicial precedents and the needs of the digital economy. The research results can be used to develop new regulations and improve the existing legal framework of artificial intelligence regulation.

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Contents

Introduction

In the rapidly evolving landscape of intellectual property, the integration of Artificial Intelligence (AI) into the creative process has become an undeniable force, reshaping the very nature of original works and introducing a host of complex legal considerations (Greenstein, 2022). Legal systems are struggling to keep up with the transformative effects of AI on intellectual property[1]. At the center of these effects lies AI's unique ontology and more specifically its autonomy, which makes AI capable of producing creative and original work without any or at least any critical human intervention.

[1] Love, J. (2023, August 7). We Need Smart Intellectual Property Laws for Artificial Intelligence, Scientific American. https://clck.ru/3GEWjn ; Ogwuche, Perpetua. (2022, October 16). Artificial Intelligence: The Legal Implications of Intellectual Property Rights for AI-generated Inventions. https://clck.ru/3GEWku

Although this is a very recent legal issue, a number of court decisions from various legal systems worldwide have begun to be produced[2]. This article attempts to explore the intersection between AI-generated works and intellectual property norms with reference to relevant recent court decisions, and with a view to examining how these may affect the direction of European Union (EU) law. The point of reference consists in the role of anthropocentrism as a prerequisite for IP protection.

The implications stemming from AI's burgeoning role in the creation of copyrighted, patented, and owned works are potentially cataclysmic, because of the expanding intelligence of AI and its capacity to emulate human intelligence characteristics which at least resemble with creativity and originality. On such grounds it is reasonable to wonder about who should owe AI-generated inventions in general and in particular under EU law. The next part refers briefly to some elements of AI ontology which are critical in order to comprehend why anthropocentrism is challenged by AI in relation to IP law.

1. AI Ontology and the role of autonomy

AI is defined in the EU AI Act as "a system that is designed to operate with a certain level of autonomy and that, based on machine and/or human-provided data and inputs, infers how to achieve a given set of human-defined objectives using machine learning and/or logic- and knowledge based approaches, and produces system-generated outputs such as content (generative AI systems), predictions, recommendations or decisions, influencing the environments with which the AI system interacts"[3]. This definition is used in the present article in order to avoid extensive parathesis of AI definitions as well as because of its comprehensive meaning. The definition in "AI act" refers to a wide range of AI output, from decision-making to content. It is on the basis of this ontology of AI that the question about the regulation of AI-generated work emerges[4].

The concept of AI, fundamentally is built around the quest to create machines which can emulate human intelligence or aspects of it; in other words, AI evolution refers to the quest for a new type of intelligent beings (Gerdes, 2018). The fundamental element of AI is its expanding, intellectual autonomy that provides it with the capacity

2 The article makes reference to the most important among them.

3 The EU Artificial Intelligence Act. https://clck.ru/3GEWoH

4 Prior to this legislative initiative, it was the European Commission's, "Artificial Intelligence for Europe", Communication from the Commission to the European Parliament, which set as goals to "Boost the EU's technological and industrial capacity and AI uptake across the economy… Prepare for socio-economic changes brought about by AI… nsure an appropriate ethical and legal framework"; EC, "Artificial Intelligence for Europe", Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, COM/2018/237 final, 25 April 2018.

to adapt to novel environments (Omohundro, 2008; Russell & Norvig, 2010). This is what makes AI so unique: the shift from automation, to autonomy. Autonomy means that AI does not constitute the mere outcome of predetermined, software programming but imitates and reproduces human learning procedure and aspects of human intelligence, through machine learning (McCarthy, 2008; Lake et al., 2016). Alan Turing's approach was that computers could imitate children's minds, methodology and evolution (Turing, 1950).

Machine learning means that AI is "taught" how to deliver certain outputs (Bostrom & Ćirkovic, 2008). The goal of machine learning is to achieve in terms of the intelligence of AI, natural-like, evolutionary patterns and therefore to come up with solutions to a wide range of not predetermined, problems, without necessarily having humans in the loop (Bostrom, 2014). Therefore, what AI is doing is to learn and decide, on the basis of the action with the highest expected utility, in light of the basic preferences and goals (Bostrom, 2014).

"Machine learning" takes place on the basis of bigdata harvesting and use so that algorithms can be trained. AI is trained on the basis of our collective, socially produced data and in this sense, AI autonomy is fundamentally – at least partially – a social outcome. It is this procedure that makes AI capable of developing and demonstrating characteristics such as logic[5] – as a tool of analysis[6] – creativity, problem solving, pattern recognition, classification, learning, induction, deduction, analogies building, optimization, surviving in an environment and language processing (Hutter, 2010; Hallevy, 2018), cognitive autonomy, intuition and strategic thinking (Yanisky-Ravid & Liu, 2018; Hallevy, 2018; Suchman & Weber, 2016)[7]. AI does not yet understand all these characteristics as a human does since it does not possess self-reflective intelligence but it already produces in many areas and cases, outputs that in humans prerequisite such intellectual capacities (Laton, 2016; Russell & Norvig, 2010)[8].

Machine learning also explains why as AI evolves its ontology becomes probabilistic, nonlinear, complicated, opaque and therefore unpredictable, raising fundamental uncertainties that have been described as the "black-box effect"; we cannot be certain what the outcome of machine learning and AI actions will be[9]. We know the input and we

5 Thomason, R. Logic and Artificial Intelligence. Stanford Encyclopedia of Philosophy. https://clck.ru/3GEWqZ

6 Ibid.

7 Camett, J. B., & Heinz, E. (2006, Apr 19). John Koza Built an Invention Machine. Popular Science. https://clck.ru/3GEWtB

8 Pyle, D., & San Jose, C. (2015, June). An executive's guide to machine learning. McKinsley Quarterly. https://clck.ru/3GEWuK

9 InFERENCe. (2015, August 13). The Two Kinds of Uncertainty an AI Agent Has to Represent. https://clck.ru/3GEWvd

see the output of machine learning but we are not certain of the in-between of the two (Karppi & Crawford, 2016; Van Asselt & Renn, 2011). The unique advantage of AI – its autonomy and therefore adaptability – comes with a significant risk as well – this is the "black box" (Castelvecchi, 2016).

Of course, there are serious disagreements about what and mainly when AI can achieve breakthroughs leading it to a level of general intelligence[10]. Nevertheless, even present, narrow AI autonomy produces transformative results – among other areas – in relation to original intellectual work, already significantly limiting or diminishing the human presence in the loop (Martinez, 2019).

The debate about whether AI can be creative and original or these are uniquely human characteristics is interdisciplinary and largely unanswered yet (Hashiguchi, 2017b; Hattenbach & Snyder, 2018)[11]. For a certain part, AI – at least the one that we currently have – is solely guessing patterns and therefore it can never be creative and original. From another perspective this is a highly unfair approach, overlooking that even at a limited extent, AI is emulating human mind characteristics, including aspects of creativity. What partially bypasses this ontological debate but also answers it in the area of law is that regardless of whether AI can be considered as ontologically creative or not, the fact is that it produces work which if produced by human authors would be considered creative and therefore protected under copyright norms.

Therefore, algorithms produce work which when produced by humans is protected under intellectual property norms. How must law treat such work? Should it be protected by IP law for the benefit of natural or legal persons or should it be freely accessible? (Xu et al., 2018)[12]. The next section briefly examines the foundations of IP law in general and EU law in particular. Then, the relevant judicial precedents are examined in order to assess the impact of AI on IP law in general and under EU law in particular.

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[10] For example, and indicatively enough, while "generative AI" is considered by many as a unique scientific breakthrough, by another part of experts is downplayed in the sense that what AI does is to predict sequences on the basis of vast data. While we are not certain about what human intelligence exactly does, it certainly does "more" than the above.

[11] Gottschalk v. Benson, 409 U.S. 63, 67 (1972); Hauser, L. Artificial Intelligence. Internet Encyclopedia of Philosophy. https://clck.ru/3GEX2y

[12] Schwab, K. (2015). The Fourth Industrial Revolution: What It Means and How to Respond. https://clck.ru/3GEX4J ; Xiang, F. (2018). AI Will Spell the End of Capitalism. Available via The Washington Post. https://clck.ru/3GEX6N ; Acemoglu, D., & Restrepo, P. (2017). Robots and Jobs: Evidence from US Labor Markets. MIT Department of Economics Working Paper, 17-04. https://clck.ru/3GEX7H ; Yongjun, Xu et al. (2021, November 28). Artificial intelligence: A powerful paradigm for scientific research. The Innovation, 2, 100179.

2. The fundamentals of intellectual property norms and AI impact. The EU law perspective

In order to address the issue of AI and IP law, first the foundations of intellectual property law must be briefly examined. To begin with, intellectual property "…very broadly, means the legal rights which result from intellectual activity in the industrial, scientific, literary and artistic fields"[13]. Intellectual property law is very simple at its core: it transforms knowledge and its practical applications into economic value (Manderieux, 2010). It is supposed to be able to achieve a balance between competitive interests – private and public – and to regulate access to benefits (Pila & Torremans, 2019).

In the framework of intellectual property, scientific works belong to the copyright branch and inventions to industrial property[14]. As inventions are defined the new solutions to technical problems, whereas scientific discoveries consist of "the recognition of phenomena, properties or laws of the material universe not hitherto recognized and capable of verification"[15]. The fundamental element of intellectual property is the intersection of the creative, nonobvious, original idea or invention, with the practical application of industrial utility. The determination of the fulfillment of each specific criterion constitutes a legal challenge.

The theoretical foundations of intellectual property norms are the labor/desert and the utilitarian/incentive theory (Khoury, 2017). The former emphasizes on the reward of the work of the creator, whereas the second on the motivation to creators to further work on new ideas and new inventories (Fisher, 2001)[16]. Both of them are built on two fundamental assumptions: the first one is that there is a human author behind the protected work and the second one is that this human must be rewarded for her/his work.

The concept of intellectual property protection has been criticized on the basis of the lack of social utility of intellectual property norms as promoters of monopolies and therefore as obstacles to innovativeness (Hemel & Ouellette, 2013; Rai, 1999).

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13 World Intellectual Property Organization. (2014). WIPO Intellectual Property Handbook. According to the Convention Establishing the World Intellectual Property Organization (WIPO), "intellectual property shall include rights relating to: literary, artistic and scientific works; performances of performing artists, phonograms and broadcasts; inventions in all fields of human endeavor; scientific discoveries; industrial designs; trademarks, service marks and commercial names and designations; protection against unfair competition, and all other rights resulting from intellectual activity in the industrial, scientific, literary or artistic fields"; Convention Establishing the World Intellectual Property Organization (as amended on September 28, 1979) (Authentic text). https://clck.ru/3GEX8a

14 Regarding AI, copyright also could be relevant given that it refers to "computerized systems for the storage and retrieval of information."; WIPO Intellectual Property Handbook, (2014).

15 World Intellectual Property Organization. (2014). WIPO Intellectual Property Handbook; The Geneva Treaty on the International Recording of Scientific Discoveries, Article 1.

16 United Nations The Role of Patents in the Transfer of Technology to Developing Countries. E. 75. II. D. 6, 1975.

Further, intellectual property rights do not emerge as other property rights out of scarcity but create scarcity eventually leading to wealth reducing, at least at a general social level (Krauss, 1989). A strong public domain is the "engine", opening the public to new ideas and inventions, whereas intellectual property protection excludes or restricts access to the protected work, therefore limiting the free flow of ideas and applications (Cohen, 2006; Salzberger, 2006). The "ocean" is the public domain and intellectual property are the "islands", which eventually "collapse" into the former (Khoury, 2017). Therefore, intellectual property rights under all legal systems must always balance with the wider public interest so that they are not abused as rights: public access must not be unfairly restricted in favor of a natural or legal person. This becomes even more critical when positioned in the framework of AI and the gradual expulsion of human from the loop.

Another common element among all legal systems is that they exclude mental activities from intellectual property protection. A variety of legal precedents have clarified this issue by introducing a crucial distinction between mental activities per se and mental activities with an industrial application. The former, mental activities without industrial application are not patent-eligible. The latter, mental activities with industrial applications may be patent-eligible on the basis of the assessment of the relationship between the mental activities and their industrial application.[17]

According to the European Patent Office, there are four basic requirements for intellectual property protection: "there must be an «invention», «susceptible of industrial application», which is «new» involving an «inventive step[18]. Under the EU legal system, it

[17] Indicatively see: (Hashiguchi, 2017a); Elec. Power Group, LLC v. Alstom S.A., 830 F.3d 1350, 1351 (Fed. Cir. 2016), 2351-2359; In re TLI Communications LLC Patent Litigation, 823 F.3d 607-613 (Fed. Cir. 2016); Alice Corp. Pty., 134 S. Ct. at 2354 (citing Ass'n for Molecular Pathology v. Myriad Genetics, Inc., 133; Enfish, LLC v. Microsoft Corp., 822 F.3d 1327, 1339 (Fed. Cir. 2016); Mayo Collaborative Servs. v. Prometheus Labs., 566 U.S. 66, 77 (2012) ("The question before us is whether the claims do significantly more than simply describe these natural relations. To put the matter more precisely, do the patent claims add enough to their statements of the correlations to allow the processes they describe to qualify as patent-eligible processes that apply natural laws?"); European Patent Office, Convention On The Grant Of European Patents 108; McRO, Inc. v. Bandai Namco Games Am. Inc., 837 F.3d 1299, 1302-1316 (Fed. Cir. 2016); Fitbit Inc. v. AliphCom, No. 16-cv-00118-BLF (N.D. Cal. Mar. 2, 2017) at 10, 22; Decision of the European Patent Office. (2004, Apr. 21). Technical Board of Appeal, Case T 258/03–3.5.1, Reasons for the Decision, 3.3, 3.7, 4.1, 4.3, 4.4, 4.7. https://clck.ru/3HrAYg ; In re Sesame Active System, 15/01962, Cour d'Appel de Paris [Court of Appeal of Paris] (26 fevrier 2016 [Feb. 26, 2016]); In re Dassault Systèmes, 14/06444, Cour d'Appel de Paris [Court of Appeal of Paris] (16 décembre 2016 [Dec. 16, 2016]); (Hashiguchi, 2017b); Decision of the European Patent Office. (1988, Oct. 5). Technical Board of Appeal, Case T 22/85–3.5.1, Reasons for the Decision, 5. https://clck.ru/3HrAYg ; Decision of the European Patent Office. (1995, Jan. 20). Technical Board of Appeal, Case T 0605/93-3.5.1, 5.3, 5.7. Reasons for the Decision, 5.9. https://clck.ru/3HrAYg ; Further, intellectual property norms do not apply to inventions that make use of the laws of nature; S. Ct. 2107, 2116 (2013); Mayo Collaborative Servs. v. Prometheus Labs., Inc., 132 S. Ct. 1289, 1293 (2012)).

[18] European Patent Office. Patentability requirements. https://clck.ru/3HrAEr ; European Patent Office, Convention on the Grant of European Patents 108 (16th ed., 2016, June). https://clck.ru/3HrAKW (compiling the European Patent Convention articles) [hereinafter European Patent Convention].

is the personality of the author that is protected by copyright laws[19] (Kur et al., 2013). The author's personality and the creativity that the latter demonstrates constitute a synthesis leading to the originality of work (Hugenholtz & Quintais, 2021). The level of creativity is assessed ad hoc and on the basis of general guidelines (van Gompel, 2014). What is undoubted is that without author's personality there is no further assessment that needs to be done[20].

The fact that the protection of the personality of the author constitutes the foundation of EU copyright law is apparent in a variety of rules: a creation cannot be modified or distorted without the permission of the author, regardless of any potential transfer of the copyright[21]; it must be associated with the author's name; the disclosure of the creation is prohibited until the author adheres to it the author retains the right to retract the creation[22]. The above elements essentially comprise the EU natural law theoretical approach (Holst, 2006; Adler, 2009).

Under EU law and in particular the influence of the European Court of Justice (ECJ) originality is linked with the "author's own intellectual creation" and therefore implicitly with human authorship (van Eechoud, 2012). It was during a short period of time, between 2009 and 2012, that the ECJ elaborated further on the linkage of originality with authorship through five decisions[23]. In these decisions it was

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19 Lundstedt, L. (2016). Territoriality in intellectual property law: a comparative study of the interpretation and operation of the territoriality principle in the resolution of transborder intellectual property infringement disputes with respect to international civil jurisdiction, applicable law and the territorial scope of application of substantive intellectual property law in the European Union and United States: Doctoral dissertation. Stockholm University.

20 Parenthetically it must be stressed that the EU does not hold the exclusive authority to legislate on IP norms; (Kur et al., 2013); European Commission, Shaping Europe's digital future, The EU copyright; Directive 2009/24/EC of 23 April 2009 on the legal protection of computer programs, article 1(3)), Directive 96/9 of 11 March 1996 on the legal protection of databases, article 3(1)), Directive 2006/116/EC of 12 December 2006 on the term of protection of copyright and certain related rights, article 6; Case C-277/10 – Martin Luksan v. Petrus van der Let (2012) ECLI:EU:C:2012:65 (Luksan), para. 59, and Case C-310/17 – Levola Hengelo BV v. Smilde Foods BV (2018) ECLI:EU:C:2018:899 (Levola Hengelo), paras. 38–39 legislation. https://clck.ru/3GEXR2 ; The Berne convention among other things simplifies the procedures for the protection of authors' rights, establishes a minimum period of protection and protects the moral rights of authors; Berne Convention for the Protection of Literary and Artistic Works, Sept. 9, 1886, as last amended, July 24, 1971 European Commission, Commission adopts Action Plan on Intellectual Property to strengthen EU's economic resilience and recovery. https://clck.ru/3GEXRY

21 (Hansmann & Santilli, 1997). There are exceptions to copyright protection in the name of public interest for the promotion of science, education and culture, as well as for data and data mining "by research organisations and cultural heritage institutions in order to carry out, for the purposes of scientific research". The InfoSoc Directive, Art. 5; Directive (EU) 2019/790 of the European Parliament and of the Council of 17 April 2019 on copyright and related rights in the Digital Single Market and amending Directives 96/9/EC and 2001/29/EC [2019] OJ L 130/92 -DSM Directive.

22 Ibid.

23 Infopaq International v. Danske Dagblades Forening [2009]; Bezpečnostní softwarová asociace v. Ministerstvo kultury [2010]; Football Association Premier League v. QC Leisure and Karen Murphy v. Media Protection Services [2011]; Eva-Maria Painer v. Standard VerlagsGmbH [2011]; Football Dataco v. Yahoo! [2012].

clarified that originality is established in "author's own intellectual creation", which presupposes free and creative choices. This type of choices is absent when the relevant techniques, functions or rules make it imperative for the author to express in only one specific way, therefore leaving no space for free choice. Creativity and free choice are essentially qualitative and not quantitative characteristics. It is not the effort of work that is put in each creation that matters but the level of creativity which goes with freedom of choice[24]. This is the case with both traditional works and the ones based on new technologies[25].

Until the emergence of AI, authorship was obviously human. This dimension was inferred by the fact that creativity, as well as freedom of choice, all presuppose the intellectual capacity, which was self-evidently the realm of human[26]. Since

[24] "[T]he significant labour and skill required for setting up that database cannot as such justify such a protection if they do not express any originality in the selection or arrangement of the data which that database contains" Football Dataco v Yahoo [2012], 53(1).

[25] The determination of the exact level of originality that is required remains with each member state. Directive 98/71/EC of 13October 1998 on the legal protection of designs, article17; Regulation (EC) No. 6/2002 of 12 December 2001 on community designs, article 96; Computer Programs Directive, recital 8: "In respect of the criteria to be applied in determining whether or not a computer program is an original work, no testsas to the qualitative or aesthetic merits of the program should be applied". Ramalho, A. (2019). Originality redux: an analysis of the originality requirement in AI-generated works. AIDA, 9; (Ricketson & Ginsburg, 2005); Case C-5/08 Infopaq International A/S v. Danske Dagblades Forening [2009] ECR I-6569, ECLI:EU:C:2009:465, para. 37; Case C-393/09 Bezpecˇnostn softwarova´ asociace – Svaz softwarove´ ochrany v. Ministerstvo kultury [2010], ECR I-13971, ECLI:EU:C:2010:816, para. 45; Joined Cases C-403/08 and C-429/08, Football Association Premier League v. QC Leisure and Karen Murphy v. Media Protection Services Ltd [2011] ECR I-09083, ECLI:EU:C:2011:631, para. 97; Guide to the Berne Convention (1978), 17–18; (Hutukka, 2023).

[26] The degree of creativity varies among different legal systems with the threshold being higher – such as for example in the US- or lower depending on the legal system and tradition. In the Painer case, which was about a photographic portrait the decision it was determined that the author: "can make free and creative choices in several ways and at various points in its production. […] By making those various choices, the author of a portrait photograph can stamp the work created with his "personal touch". Consequently, as regards a portrait photograph, the freedom available to the author to exercise his creative abilities will not necessarily be minor or even nonexistent". In the Cofemel case the Court argued 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". Feist Publications v. Rural Telephone Service 499 U.S. 340 (1991), 346; CCH Canadian v. Law Society of Upper Canada [2004] 1 S.C.R. 339; Case C-145/10 – Painer, paras. 90–93; Case C-145/10 – Painer, para. 92; Case C-683/17 – Cofemel, para. 30; Case C-5/08 Infopaq International A/S v. Danske Dagblades Forening [2009] ECR I-6569; ECLI:EU:C:2009:465, para. 37; Case C-393/09 Bezpecˇnostnı´ softwarova´ asociace - Svaz softwarove´ ochrany v. Ministerstvo kultury [2010], ECR I-13971, ECLI:EU:C:2010:816, para. 45; Joined Cases C-403/08 and C-429/08, Football Association Premier League v. QC Leisure and Karen Murphy v. Media Protection Services Ltd. [2011] ECR I-09083, ECLI:EU:C:2011:631, para. 97; Case C-604/10 Football Dataco and Others v. Yahoo! UK Ltd. and Others[2012]; ECLI:EU:C:2012:115, para. 38; Case C-5/08 Infopaq International A/S v. Danske Dagblades Forening [2009] ECR I-6569, ECLI:EU:C:2009:465, para. 45; Case C-393/09 Bezpecˇnostnı´softwarova´ asociace – Svaz softwarove´ ochrany v. Ministerstvo kultury [2010], ECR I-13971, ECLI:EU:C:2010:816, para. 50; Case C-145/10 Eva-Maria Painer v. Standard VerlagsGmbH and Others [2011] ECLI:EU:C:2011:798,paras. 89, 92; Parenthetically, originality describes a condition where the work is not copied and is the result of "skill, judgement and/or labour"; (Bently & Sherman, 2014).

intellectual property protects author's personality, what personality is to be protected if there is no human author?[27] It is in this relationship that AI steps in, which explains why all these self-evident until recently facts are tested under the influence of AI.

The advent of technology, as already mentioned prompted fundamental reconsiderations of the traditional concept of authorship even prior to AI. From the 1988 Green Paper, to the Directive 91/250/EEC of 14 May 1991 on the legal protection of computer programs, the issue of human authorship gradually emerges as a matter of debate (Walter & von Lewinski, 2010). Until AI there was little doubt about the anthropocentrism of authorship. Computers are "automata", not autonomous. AI however, through its variety of applications can produce the type of work that until the AI era could be only the output of human intelligence (Hugenholtz & Quintais, 2021). Even existing, narrow AI (ANI) can by now produce creations in practically all the areas of human creativity and intellectual activity (Senftleben & Buijtelaar, 2020; Gervais, 2019; Senftleben & Buijtelaar, 2020; Butler, 1982).

Given that human presence in the loop – or on the loop – decreases, the linear causality between the (distant) human "mind" behind an AI algorithm and the final invention or work sublimates at least up to a significant extent or even – by now – completely. How are we going to assess it so that we can reach a conclusion about whether copyright protection should be provided or not (Hashiguchi, 2017a)? When is it not fair anymore to reward a human for AI's work (Spector, 2006; Jaszi, 1992; Grinmelmann, 2016)[28]?

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[27] For example InfoSoc case by the CJEU at the expense of legal entities. In even clearer terms, it was Advocate General Trstenjak in her opinion in the Painer case, the one who directly linked intellectual property norms with human nature: "only human creations are therefore protected…"; Case C-277/10 – Luksan; Case C-572/13 – Hewlett-Packard Belgium SPRL v. Reprobel SCRL (2015); ECLI:EU:C:2015:750 (Reprobel); Opinion AG Trstenjak in Case C-145/10 – Painer, para. 121; Identical is the US Copyright Office approach as well: "works produced by a machine or mere mechanical process that operates randomly or automatically without any creative input or intervention from a human author" if it determines that a human being did not create the work"; USPTO, Compendium of U.S. Copyright Office Practices § 101 (3rd edn. 2017). https://clck.ru/3GEXSn , Arts. 306 and 313(2).

[28] Sloman, A. (2007). What is Artificial Intelligence?, School of Computer Science The University of Birmingham. https://clck.ru/3Hr9gj ; Burrow-Giles Lithographic Co. v. Sarony, Ill U.S. 53 (1884); Midway Mfg. Co. v. Artic Intern., Inc., 704 F. 2d 1009, 1011 (7d Cir. 1983). Back in 1965, in the US, the Register of Copyrights submitted to the Congress, a report, about computer-generated work, raising the issue of copyright, given that part of such work is generated by computer. The, then established National Commission on New Technological Uses of Copyrighted Works (CONTU) held that computers are no different from cameras or typewriters, with copyright belonging only to the user. U.S. COPYRIGHT OFFICE, SIXTY-EIGHTH ANNUAL REPORT OF THE REGISTER OF COPYRIGHTS 5 (1965). https://clck.ru/3GEo8C ; NAT'L COMM'N ON NEW TECH. USES OF COPYRIGHTED WORKS, FINAL REPORT OF THE NATIONAL COMMISSION ON NEW TECHNOLOGICAL USES OF COPYRIGHTED WORKS 44-45 (1978). https://clck.ru/3GEXrV ; Arsheeya Bajwa. IBM beats profit estimates as AI shift boosts software performance, shares surge. (2025, January 30). Reuters. https://clck.ru/3HK9es ; van den Oord, A., et al. (2016, Sept. 8). WaveNet: A Generative Model for Raw Audio. arXiv. https://clck.ru/3HK9hP ; Mordvintsev, A. et al. (2015, June 17). Inceptionism: Going Deeper into Neural Networks, GOOGLE RES. BLOG. https://clck.ru/3HK9ip ; (Hashiguchi, 2017a).

In this context, a number of court rulings internationally help us further elaborate our approach to the effect of AI on the requirement of an author who must be protected under IP law.

3. Judicial precedents assessing the impact of AI on copyright law

The relevant judicial precedents emerge both from EU member states' and internationally. All of them are useful in order to clarify the intersection of AI and IP protection in general and under EU law.

A US Court, the District Court of Columbia held that an entirely AI-generated artwork, in the production of which there is not any human involvement, is ineligible for copyright protection because of the lack of human authorship. The case was built on the request of the owner of a computer system called "Creativity Machine" to register for copyright protection the visual art which was produced by the AI and then transfer to him the copyright because he was the owner of the system. The US copyright office declined the copyright protection because of the lack of human authorship. The plaintiff invoked the common law "work-for-hire" doctrine in his favor. The Court held that these arguments concern "…to whom a valid copyright should have been registered, and in so doing put the cart before the horse". it further held that "Copyright is designed to adapt with the times. Underlying that adaptability, however, has been a consistent understanding that human creativity is the sine qua non at the core of copyrightability, even as that human creativity is channeled through new tools or into new media"[29].

In another case, the US Copyright Office concluded that AI-generated content must be disclaimed in the registration application to provide the Office with the information relevant to the preparation or identification of the work or to the existence, ownership or duration of the copyright, eventually refusing to register under copyright norms the relevant AI-generated work. In particular the Board found that "… the Work contains more than a de minimis amount of content generated by artificial intelligence ("AI"), and this content must therefore be disclaimed in an application for registration"[30]. The work under assessment was upgraded by the human who claimed copyright protection but the Board found that since he refused to disclaim the material produced by AI and this material exceeded a de minimis amount of AI-generated content, copyright protection could not be provided. The Board in its decision reiterated the findings of the Thaler v. Perlmutter case in which it was held that "human authorship is a bedrock requirement

[29] US District Court For The District Of Columbia, Stephen Thaler v Shira Perlmutter, Case 1:22-cv-01564-BAH Document 24 Filed 08/18/23, at pp. 7, 8.

[30] United States Copyright Office, Second Request for Reconsideration for Refusal to Register Théâtre D'opéra Spatial (SR # 1-11743923581; Correspondence ID: 1-5T5320R), (2023, September 5).

of copyright"[31]. The Board also mentioned another famous case, "Urantia Found. v. Kristen Maaherra", the judge of which had found that "some element of human creativity must have occurred in order for the Book to be copyrightable" and that "it is not creations of divine beings that the copyright laws were intended to protect"[32].

The US copyright office has been consistent in that the fundamental necessity for copyright protection is human authorship. In this framework it issued public guidance according to which the fundamental question consists in ""whether the 'work' is basically one of human authorship, with the computer [or other device] merely being an assisting instrument, or whether the traditional elements of authorship in the work (literary, artistic, or musical expression or elements of selection, arrangement, etc.) were actually conceived and executed not by man but by a machine"[33].

The United States Patent and Trademark Office (USPTO) Inventorship Guidance for AI-Assisted Inventions, which came into effect by February 13, 2024, establish joint inventorship rules between human and AI in AI-assisted inventions. In cases where a human and generative AI are each instrumental in creating an invention they are determined as co-inventors. Given however the fact that AI cannot be protected as inventor the crucial issue becomes whether, for each patent application, "at least one natural person has made a "significant contribution" that satisfies the joint inventorship Pannu factors required of being an inventor. If not, then the invention cannot be patented because there is no inventor to list"[34].

In order therefore to have intellectual property protection in a joint human-AI scheme, the human co-inventor must be able to prove that simultaneously and crucially participated both in the conception and in the industrial application of the invention; not only in one of the two. The USPTO guidelines are particularly helpful in cases such as for example when the human simply owns the AI system, or provides to the latter the problems that it must solve. These are not cases of IP protection. On the contrary, the design, building and training of AI in order to solve a particular problem, as well as a critical participation of the human in the problem-solving procedure of AI may lead to recognition of inventorship[35]. The afore-mentioned guidelines coincided with

31 Ibid.

32 Ibid.

33 Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence, 88 Fed. Reg. 16,190, 16,192 (Mar. 16, 2023) ("AI Registration Guidance").

34 The Pannu factors consist of the significance of the contribution on the conception and materialization of the invention, the significance of the qualitative contribution and originality/ creativity in the sense of doing more than explaining well- known concepts. Katsulis, A. (2024, May 14). Clarifying AI and inventorship: USPTO's guidance for AI-assisted inventions. Inside Tech Law. https://clck.ru/3GEY7Q

35 Ibid.

the judicial precedent of the Thaler v Vidal case, where the recognition of AI as inventor was declined[36].

Both US courts and authorities have contributed significantly in the relationship between AI and intellectual property: AI-oriented inventions are in principle excluded from IP protection. It is not the actual capacity of AI to invent things that is denied but its potential protection under IP law. In this sense, IP protection is safeguarded only after careful, case-by-case, quantitative and qualitative examination, assessing the role of the human factor and AI work[37].

The Internet Court of Beijing partially distanced itself from the afore-mentioned reasoning in a similar case[38]. It also made a quantitative assessment between human work and AI but found that the work was eligible for copyright protection because it was original. Its originality stemmed "from the numerous positive and negative prompts inserted and the adjustments and amendments made by the human user to select the final image that matched his expectations"[39]. The Court held that in spite of AI involvement, the AI-generated image "… reflected the plaintiff's individual creativity and aesthetic choices made during the creation process". The plaintiff's creative intellectual input included designing, selecting prompts, setting parameters during the image's creation, amending and adjusting the output image several times, until he reached a final image that matched his expectations. In light of the above, the Court found that "AI models lack legal personality and humans remain the creators of works generated using this technology"[40].

The Court in particular has reached a rather problematic conclusion in this regard. On the one hand, it maintains the assessment of the degree of impact of human intelligence on the produced work on a case-by-case basis, but on the other hand it lowered the threshold of necessary human participation considerably. Therefore, while it does not deny the prerequisite of human authorship in principle, it practically relativizes its significance. Further, the fact that AI does not have legal personality should not imply that copyright passes to its human owner automatically. Why the lowering of the threshold of necessary human involvement is problematic becomes profound on the basis of the founding on intellectual property protection on human personality, as among various cases,

36 Thaler v. Vidal, 43 F.4th 1207 (Fed. Cir. 2022).

37 The Canadian Intellectual Property Office (CIPO) followed a similar path, but in a somewhat ambiguous way. On the one hand, it ruled that AI could not be the inventor, and on the other, it provided a loophole by proposing the applicant to submit an application on behalf of the artificial intelligence system and identify oneself as its legal representative.

38 US and Chine pioneer in the evolution of AI. Their Courts' decisions therefore are points of reference.

39 European Union Intellectual Property Office. (2024, May). Recent European Case-Law On The Infringement And Enforcement Of Intellectual Property Rights, at pp. 5–6.

40 Ibid, at p. 5.

the recent one "Lithoss Nv V Vimar S.P.A. And Vecolux BV" reiterated[41]. The reasoning of the Beijing Court seems to falsely confuse automation with autonomy. It also seems to be partially "manipulating" the true ontology of AI in furtherance of not jeopardizing the continuation of intellectual property protection and profit.

Chinese courts nevertheless have also come to decisions which are better aligned with the goals of intellectual property norms and their emergence from human authorship. The Beijing Internet Court held in the "Beijing Film Law Firm v Beijing Baidu Netcom Science & Technology Co Ltd (Film)" case, that creation by natural persons was a prerequisite for protection under the Chinese copyright law. In that case the work produced by AI was not to be protected by copyright law, regardless of its originality (Yong Wan & Hongxuyang Lu, 2021).

Not all states' copyright laws and judicial precedents follow the same logic with the US and the EU or at least not always: the United Kingdom, South Africa, New Zealand, Ireland, and India, all have recognized copyright protection for computer-generated work, even absent any human intervention. According to the High Court of England and Wales (High Court of Justice), composite screen frames generated by a computer program of a coin operated video game are computer-generated works because the software built up composite images by overlaying the digital image of a pool table with images of the balls and cue.[42] "In the case of a literary, dramatic, musical or artistic work which is computer-generated, the author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken"[43]. While UK courts decrease up to some extent the level of copyright protection in the afore-mentioned cases and the subsequent profitability from the relevant copyright protection, still in that instance had reached a legally and ethically unjustifiable norm of securing profits and ownership for humans who have shown no real authorship. Such approaches constitute an abuse both of the intellectual property norms and rights, as well as of the employer-employee relationship, given as previously mentioned that machines are not employees but owned technology, part of capital (Hristov, 2017).

Nevertheless, in the "Comptroller-General of Patents, Designs and Trade Marks v Emotional Perception AI Ltd" case, the English Court of Appeal overturned the previous argumentation and found that an Artificial Neural Network (ANN) was not patentable. The Court dealt with three questions: "Is an ANN a "computer"? If it is a computer, is an ANN a program for a computer "as such", within the meaning of section 1(2) of the Patents

41 Antwerp Court of Appeal, 2021/AR/1900, LITHOSS NV v VIMAR S.p.A. and VECOLUX BV [13 September 2023].

42 Nova Productions v. Mazooma Games, [2006] EWHC 24 (Ch) (UK).

43 Copyright, Designs, and Patents Act 1988, c.48 §§ 12(7), 79(2), 81(2).

Act 1977 (meaning that it would be excluded from patentability unless the next bullet applies). If the ANN is a program for a computer, did the ANN nevertheless fall outside the computer program exclusion (and so be patentable) because it had a "technical contribution" outside itself?"[44] The Court reached the conclusion that ANN is a computer, functioning as a computer program and in this sense that its recommendations are not technical but a matter of aesthetics. In this sense it "corrected" the precedent of the High Court and ascertained that there can be no IP protection for AI generated work.

The Federal Court of Australia, as well, in the Thaler case of 2022 had concluded that AI cannot be recognized as an inventor[45]. The Court had found that only natural persons can be labelled as "inventors" and that it is necessary to have a legal relationship between the human inventor"… and the person first entitled to the grant, which is a legal impossibility in… case where the purported inventor has no legal identity and therefore cannot give effect to an assignment"[46].

A crucial decision albeit with a problematic syllogism was issued by the German Federal Court of Justice (Bundesgerichtshof – BGH), in the "DABUS" case, according to which only natural persons can be named as inventors under IP protection law. The German Court reached three landmark points in its judgment: first that AI can not be the inventor; second that behind every AI-generated invention there is a certain level of human contribution, which even if not inventive or substantial can lead to the designation of a human as the inventor provided that (s)he is the one with the decisive influence; and third that patent applications must not include contradictory statements. It must be declared that either the human or AI conceived the invention[47]. The decision is crucial but at the same time characteristic of the perplexity of certain part of the judiciary. In fact, it is crucial especially because of this last reason.

The court confused the recognition of AI under intellectual property law as inventor with the actual capacity to conceive inventions. In this sense it confused law with ontology. The true ability of AI to conceive inventions is almost undoubted. This decision ignores this real condition. Instead, the court's attempt in this decision appears to be to ignore AI's ability in question, to banish AI from the true ability of inventing, and then, on the basis of the above false conception, to attribute invention to a human, even if his/her actual participation is entirely secondary or even insignificant. The Court

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44 Maloshchinskaia, P. (2024, July). Artificial intelligence: English Court of Appeal decides artificial neural network is not patentable. Inside Tech Law. https://clck.ru/3GEY92

45 Commissioner of Patents v Thaler [2022] FCAFC 62 (Thaler FC).

46 O'Brien, J., & Taylor, I. (2022, May 5). Demise of the machines: Full Court of the Federal Court of Australia overturns ruling on AI as a patent 'inventor'. Inside Tech Law. https://clck.ru/3GEYAf

47 Kalhor-Witzel, R. (2024, July). Germany: AI cannot be named as inventor – insights from the Bundesgerichtshof's DABUS decision, Norton Rose Fulbright. https://clck.ru/3GEYCa

limits itself only to the formality of whether only human is referred to as inventor or not. This is an attempt by the court to cling to the traditional approach to IP law, without taking into account the transformations taking place, resulting in an abuse of rights and unfair restriction of public access to the benefits of AI. The problem with the Court decision is not that it does not recognize AI as inventor under IP law but that it insists to do so with a human, regardless of the latter's actual role in the invention. The result of this approach is to limit public access to an invention when there is really no human personality that needs to be protected. In this sense, it conflicts with EU law's natural law-oriented approach to the need to protect the personality of the person who actually invents something original thanks to his creative conception.

Czech Courts produced a landmark decision, consistent with the requirement of human authorship. The case was brought in front of the Municipal Court in Prague and the plaintiff had used DALL-E, an AI program, in order to generate an image according to his request: "create a visual representation of two parties signing a business contract in a formal setting, such as a conference room or a law firm office in Prague. Just show your hands"[48]. The image that was used by the plaintiff on his website, was copied and posted without his authorization by the defendant. The argument of the plaintiff did not doubt that it was AI that created the image but claimed that because of his assignment to the AI he should be copyright protected as the author. The Court rejected his argument by reaching the decision that first AI cannot be recognized as the author and secondly there was no unique creativity in his action. The Prague Court very adamantly held that the AI-generated work did not constitute a «work» because it was not the unique result of the creative conception of a natural person. According to the court: «Copyright is an absolute right belonging to an individual. If the image in question was not created personally by the applicant, but by an artificial intelligence, it cannot, by definition, be a copyrighted work"[49].

All the above jurisprudence, despite its internal contradictions, is particularly illuminating for the effect of AI-oriented or generated inventions on intellectual property norms internationally and in particular under EU Law. The first and fundamental point of reference is that copyright protection is exclusively safeguarded for human authors. It is a timeless and international common foundation of IP law. Characteristic in these regards – before the AI era – is the precedent in the Burrow-Giles Lithographic Co. v. Sarony case, where the Court held that the crucial factor for copyright protection is the originality of the ideas of the author. The definition of the term "author" is according to the court anthropocentric through the characterization of copyright as "the exclusive

48 Czech court finds AI tool cannot be an author of a copyright work. https://goo.su/MQNOed

49 Novagraaf Team. (2024, May 1). AI and copyright: First ruling from a European court, Novagraaf. https://clck.ru/3GEYFv

right of a man to the production of his own genius or intellect"[50]. This reasoning has been followed both in the era of automation, as well as in the era of autonomy, i.e. of AI.

The central question is if a natural person can be protected as the author of the work that has been generated by AI. Different approaches can be found here. The common thread between case-law from different legal systems is that copyright is not automatically recognized in favor of the natural person who owns the AI system. In some legal systems, mainly that of the USA and EU, there is the requirement of a substantial, significant contribution of the natural person to the invention, both in terms of conception and industrial application, in order to be recognized as a co-inventor. In other legal systems, as we observed, it is easier to deliver intellectual property protection even with a minimal participation of the natural person. In any case, however, the weighting of the degree of human participation, whether a higher or lower level of contribution is required, is also a horizontal among different legal systems point of reference.

In order to assess the contribution of these judicial precedents in the clarification of EU law we must keep in mind that copyright protection under EU law is founded on natural law theories. Intellectual property protection exists not for speculative reasons but as a material reward of the personality of the human author and more specifically of her/his creativity. Absent this element, there is no moral and legal foundation for copyright protection in general and especially under EU law (Sobel, 2017). In principle, there is no sense of fairness in protecting AI-oriented creations under intellectual property norms. The attribution of such rights to a natural person for work that does not include her/ his own creativity constitutes an abuse of intellectual property norms since a human or a legal entity will be profiting by restricting the wider public's access to work that was not of any human author.

In order to understand even better how unbalanced and disproportionate the attribution of such rights is, the role of machine learning must be also taken into account, which is making AI at a significant extent a social project, given that machine learning is conducted on the basis of collective, big data, produced by us all.

In addition, intellectual property norms by definition are not designed in order to create a framework of "the goose that lays the golden egg", or to disproportionately restrict public access and interest. Intellectual property is designed to protect each specific human author's creativity leading to original work with industrial application as an "island" in the "ocean" of ecumenically accessible knowledge and applications.

The definition of creativity under EU law also deserves attention in conjunction with the afore-mentioned judicial precedents as well. The CJEU talks about "…creative

[50] Burrow-Giles Lithographic Co. v. Sarony, 111 U.S. 53, 54, 56, 58, 61 (1884).

abilities [of the author] in the production of the work by making free and creative choices"[51]. The word "free" implies "autonomy". From such a perspective, AI already can at least up to some extent make choices which if done by humans would be considered as free choices and therefore be creative. Once this is the case, there is no human creativity to be rewarded (Ginsburg & Budiardjo, 2019). There is only AI's creativity which is excluded from IP protection however.

An attempt to "come around" the lack of human authorship is the one arguing in favor of re-defining the concept of employer and employee (Hristov, 2017). Under this approach, the relationship between the human owner and the AI is considered as an adjusted relationship between employer and employee. The problem persists however: there is no human personality being the main – even more the sole – author of the copyrighted work and therefore nothing to be protected under IP protection norms. Copyright protection regardless of the lack of human author would simply constitute an abuse of the right. It is very simple: the foundations of copyright protection for AI-generated work are not there since no human author's personality can be found. Copyright constitutes an anthropocentric concept (Zurth, 2021). In a characteristic case brought in front of a US Court about copyright from a photo clicked by a monkey it was very clearly held that only human authorship can be protected under copyright law: "[W]e conclude that this monkey – and all animals, since they are not human – lacks statutory standing under the Copyright Act"[52].

Further, "baptizing" machines as employees is simply arbitrary. All types of machines, until at least they reach the level of general or super intelligence and the equivalent, fully autonomous legal personality is considered as part of capital. The ECJ has also answered to the afore-mentioned approach: copyright protection's prerequisite is the expression of author's "creative abilities in the production of the work by making free and creative choices"[53]. It is not the owner who makes free and creative choices but the one conceiving the idea and producing the original work.

After all, under EU law and according to the European Court of Justice precedents, there is no doubt about the linkage between author's personality and intellectual property; any work is original once it is the "author's own intellectual

51 Case C-469/17 – Funke Medien, para. 19; Case C-145/10 – Painer, paras. 87–88.

52 Naruto v. Slater, 888 F.3d 418, 420 (9th Cir. 2018)").

53 Case C-145/10, Painer v. Standard VerlagsGmbH, 2011 E.C.R. I-12594, 89; see also Case C-604/10, Football Dataco Ltd. v. Yahoo! UK Ltd., ECLI:EU:C:2012:115, 38 (Mar. 1, 2012).

creation"[54]. Even skill and work are secondary to the "personal stamp" element. They cannot justify protection by themselves but constitute elements in the wider scheme of intellectual property protection[55]. The potential protection of AI-oriented work under copyright law constitutes a violation of the "alterum non laedere" principle: public access to AI benefits will be restricted without any fair and legitimate basis for this to happen. Such an approach is both disproportionate and unreasonable (Sganga & Scalzini, 2017; Mizaras, 2012). For intellectual property norms to apply they must be relevant with each case, proportional and fair.[56] This is obviously not the case when one of the fundamental pillars of intellectual property – human author – are absent. All of the above lead us to the same direction: copyright law is anthropocentric (Ginsburg, 2018).

The ineligibility of AI – oriented work for copyright protection however does not completely clarify the issue of the required threshold for human contribution in order to talk about human author or co-inventor. A more difficult question in other words, is whether we can have some qualitative and quantitative criterion about when AI's intervention is so catalytic that human can no more be considered as the author of the work under potential copyright protection.

The threshold of human contribution is as shown above, debated. As already mentioned, EU law in this area is natural law-oriented. Therefore, the EU legal system must be interpreted as leaning to impose the highest possible threshold of human contribution in order to have copyright protection. Such an approach aligns with EU Courts' decision – and the ones of the US. The human author's personality must be directly linked with the invention either in the sense of being the sole inventor or as co-inventor. This means that for example it is not enough to simply present the question to AI but that either AI does some secondary work or solei or at least that the human has re-arranged and combined AI's outputs in a creative way.

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54 Infopaq International v. Danske Dagblades Forening [2009]; C393/09 Bezpečnostní softwarová asociace v. Ministerstvo kultury [2010] E.C.R. I-13971; C-403/08 and C-429/08 Football Association Premier League and Others v. QC Leisure and Others and Karen Murphy v. Media Protection Services [2011]E.C.R. I-09083; C-145/10 Eva-Maria Painer v. Standard VerlagsGmbH and Others [2011] E.C.R I-12533; C-604/10 Football Dataco v. Yahoo! UK and Others [2012] EU:C:2012:115) Football Dataco v Yahoo [2012], 53 (1): "The significant labour and skill required for setting up that database cannot as such justify such a protection if they do not express any originality in the selection or arrangement of the data which that database contains".

55 Directive 2009/24, of the European Parliament and of the Council of 23 April 2009 on the Legal Protection ofComputer Programs, art. 1, 3, 2009 O.J. (L 111) 16, 18 (EC).

56 Productores de Música de España (Promusicae) v Telefónica de España SAU, Case C-275/06, [2008] ECR I-271, para. 68. Football Association Premier League Ltd and Others v QC Leisure and Others, Case C-403/08, Karen Murphy v Media Protection Services Ltd, Case C-429/08, (2012) EWHC 108.

The concept of abuse of copyright law can further clarify the issue at hand. While the issue of the potential abuse of copyright law rights because of AI-oriented inventions has not been fully developed, still some guidelines can be inferred from EU courts' past decisions in relation to human author and his/her behavior as rightsholder, in cases such as "Deutsche Grammophon", "Coditel" I "Coditel II" and "Metronome Musik"[57]. The fundamental notion in all of the afore-mentioned cases is that of reasonableness, proportionality and appropriateness in "the protection of the moral and economic rights" of the author[58]. When there is a human author reasonableness, proportionality and appropriateness take the form of reasonable renumeration from the commercial use of the creation. When there is no human author, the same concepts should take the form of non-attribution of intellectual property norms due to the ellipsis of the primary prerequisite of copyright protection. When there is some human interference, this should be proven to be creative outside the output of AI. According to the CJEU copyright laws require the "…"indispensable" intervention by the operator (without this intervention, the customers would not be able to enjoy the work)" (Xalabarder, 2016). In AI- oriented work the question must be: is the human contribution in the invention indispensable for its materialization?

On such grounds, a normative framework which will provide us with guidance on a step-by-step basis is required. Just as the EU AI Act was adopted, a law about AI and intellectual property can be designed and put in practice as well. Ahead of such a potential legal development we need to envisage what could be the case for such a development.

An initial prerequisite could consist in the obligation to maintain accessible by the relevant patent authorities "log files" showing every step until the final work is produced and each "actor's" – both human and AI – participation in the final outcome. This is a "sine qua non" so that we can then assess qualitatively and quantitatively each actor's contribution. The log files should be submitted to the relevant authorities and in order for a human to be eligible for copyright protection these files should be accessible for assessment.

On the basis of this first step, the second one could be the reconstruction of the creative process. Some crucial thresholds of creativity must be determined: the selection of the area of interest, meaning in which scientific and industrial area an effort to become creative will take place; the conception of the original idea and of its later versions; the data on the basis of which the training will take place; the repetitive work until the original idea or its versions have been finalized. It is obvious that not all of these steps share the same qualitative value in the conception and the produce of the final creative work.

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57 Case C-78/70 Deutsche Grammophon Gesellschaft mbH v. Metro-SB-Großma¨rkte GmbH & Co; KG.Deutsche Grammophon v. Metro SB [1971] ECR 487, para. 11; Case C-262/81 Coditel v. Cine´Vog Films II (Coditel II) [1982] ECR 3381; Case C-200/96, Metronome Musik GmbH v. Music Point Hokamp GmbH [1998] ECR I-1953; (Xalabarder, 2016).

58 Case 158/86 Warner Brothers and Another v. Christiansen [1988] ECR 2605, para. 13.

Through the log files the relevant authorities will be able to determine who is the subject of the causal link between the conception of the idea and the industrial application. In order for a work to be copyright-eligible, it should be proven that it is the human intelligence the one behind both the conception of the idea and the work that is needed in order for this idea to become industrial application. If the human fails to prove both the conception of the idea and its transformation to industrial application, then there can be no copyright protection. Secondary contributions by the human, such as improvements in the final work or only partial revisions of it will not be enough to justify copyright protection. Obviously, the relevant administrative and judicial authorities will have to make assessments.

There may be cases of course where regardless of the provision of whatever log files it will be impossible to determine whether it is the human or the artificial intelligence the subject of the causal link, due to a constant, back and forth interaction between the two. In such a case, of close and equally creative collaboration between human and artificial intelligence, again it would be unfair for the human to gain profit since (s)he is not the sole creator. Even if the time frame of copyright protection is reduced, for this period, the human will benefit from something that is not only human work. Therefore, the request must be for solely human authorship and for the burden of proof on the human.

Conclusions

EU law has been facing increasing challenges in terms of dealing with the impact of emerging technologies and especially AI on intellectual property norms (Rosati, 2014). In fact, it is not only the EU legal system that faces such difficulties but legal systems all over the world. AI is raising new challenges in front both of lawmakers and courts – which especially under EU law have played significant role in shaping the intellectual property norms (Favale et al., 2016). It cannot be questioned that AI transforms the intellectual property landscape at an unprecedented degree (Cabay & Lambrecht, 2015).

Intellectual property norms are not absolute. They must be balanced with public interest and competitive rights. Several EU member-states' national legislations contain such provisions, as well as the EU law. While the exact extent of intellectual property protection both at the constitutional level as well as at the level of ordinary laws differs among member-states, the need for balanced approach is not questioned[59]. The CJEU has adopted this position as well. In the "Scarlet Extended" and in "NetLog" cases it held

[59] Geller, P. E. (2009–2010). A German Approach to Fair Use. Test Cases for TRIPS Criteria for Copyright Limitations, in 57 Journal of the Copyright Society of the USA 553, 907; Moscarini, A.(2006). Proprietà privata e tradizioni costituzionali comuni, Milano, 2006, 161 ff.

that while intellectual property rights are protected, "there is (…) nothing whatsoever in the wording of that provision or in the Court's case-law to suggest that that right is inviolable and must for that reason be absolutely protected"[60]. Intellectual property protection must be fair towards the author – rewarding author's personality – and also proportional in relation to public interest which needs the widest possible access to knowledge, creations and industrial applications.

The proposal of this article is that in AI-oriented work, AI can be ontologically creative in spite of the fact that its inventions cannot be protected under copyright law. AI is not mere automata but a unique, distinct actor with capacities of autonomous creation. The prohibition of public access to its work therefore, is unfair, disproportionate and abusive under intellectual property norms, both under EU law and international copyright law. What is needed is in fact a new set of norms and regulations under EU law, a type of AI autonomy standards and metrics that can guide us in terms of when an AI entity is so autonomous that its outputs must be freely accessible by us all. The principle must be ecumenical access to AI-generated work. This must be the new guiding principle in the emerging era of AI-generated work.

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Эволюция авторского права в эпоху искусственного интеллекта: анализ правовых коллизий и судебных прецедентов

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Ключевые слова

авторское право,
законодательство,
интеллектуальная собственность,
искусственный интеллект,
междисциплинарный подход,
право,
правовое регулирование,
суд,
технологический прогресс,
цифровые технологии

Аннотация

Цель: комплексный критический анализ современных проблем в области правового регулирования технологий искусственного интеллекта, возникающих на стыке норм интеллектуальной собственности и искусственного интеллекта. Особое внимание уделяется исследованию коллизий между существующим европейским законодательством об авторском праве и новыми технологическими реалиями.

Методы: в работе применяется междисциплинарный подход, включающий исторический, формально-юридический и сравнительно-правовой методы исследования. Исторический метод позволил проследить эволюцию законодательных и доктринальных подходов к регулированию интеллектуальной собственности в эпоху цифровизации. Формально-юридический метод дал возможность провести детальный анализ правовых норм различных государств. Сравнительно-правовой метод обеспечил возможность сопоставления различных подходов к регулированию отношений, связанных с использованием искусственного интеллекта в творческой деятельности.

Результаты: в ходе исследования детально рассмотрены вопросы авторского права на произведения, созданные с помощью искусственного интеллекта, включая сложные аспекты определения авторства и проблемы антропоцентризма в современном законодательстве. Проведен анализ судебных прецедентов, преимущественно в контексте законодательства Европейского союза, которое активно адаптируется к новым технологическим вызовам. Исследованы различные подходы к определению правового статуса произведений, созданных с помощью искусственного интеллекта, и их влияние на традиционные концепции интеллектуальной собственности.

Научная новизна: в статье впервые представлена комплексная оценка влияния творческих возможностей искусственного интеллекта на

фундаментальные концепции интеллектуальной собственности. Научная значимость заключается в оригинальной авторской оценке воздействия технологий искусственного интеллекта на законодательство об авторском праве, основанной на детальном анализе судебных прецедентов и доктринальных подходов. Исследованы перспективы развития правового регулирования в условиях технологического прогресса.

Практическая значимость: в работе предложены конкретные правовые и государственные решения, направленные на формирование сбалансированного и эффективного режима интеллектуальной собственности в эпоху искусственного интеллекта. Разработаны рекомендации по совершенствованию законодательства с учетом существующих судебных прецедентов и потребностей цифровой экономики. Результаты исследования могут быть использованы при разработке новых нормативных актов и совершенствовании существующей правовой базы в области регулирования искусственного интеллекта.

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Рубрика OECD: 5.05 / Law
Рубрика ASJC: 3308 / Law
Рубрика WoS: OM / Law
Рубрика ГРНТИ: 10.41.51 / Охрана авторских прав
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