Protection of AI-generated content: current state and the need to search for a new model

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Abstract

The twenty-first century is accompanied by rapid growth in the ubiquitous search and discovery of technologies among which there are relatively autonomous and previously unknown AI systems, the independence and limits of which we have yet to learn. It inevitably creates new challenges for the system of legal norms that protect intellectual property rights and copyright in particular.

Nowadays there is a discussion at various levels about the status of content created by artificial intelligence and about the possibility and need for its protection by legal means. This article will discuss general approaches to the current status of AI as well as some of the main obstacles to the protection of AI-generated content within the existing copyright paradigm and finally analyze some of the alternative ways to protect such AI-generated content.

The main idea of the author is the need to find an optimal balance of protecting the interests of authors, other copyright holders and investors/owners of AI systems that can create content that by external features can be protected by copyright without a significant revision of the existing copyright system at least soon.

Keywords: Copyright, AI Protection, Artificial Intelligence and Copyright, AI-generated Content, Computer-Generated Outputs, Originality, Authorship, Sui Generis Regime, Related Rights

Contents

1. What is AI?

1.1. Approaches to the definition of AI

Artificial intelligence is a relatively new phenomenon, but it is gradually pervading deeper into our surrounding reality and everyday life.

Clarification and understanding of AI as a phenomenon as well as the mechanism of its operation is of primary importance for the discussion on the protectability of *works*[1] created with AI or by AI, in particular, those works which are typically by their nature can be protected under a copyright regime.

An empirical test for the definition of AI was proposed by Alan Turing in 1950 when such a term did not yet exist. According to this test, a "thinking machine" is considered to be the one that a person in a conversation with her took for a person. Although there have recently been several public statements about the "successful" passing of the Turing test (for instance, a computer program called Eugene Goostman, which simulates a 13-year-old Ukrainian boy[2] or new Google Duplex feature is designed to pretend to be human[3]), such references were met with a large portion of criticism and scepticism.

At the same time, most people think that this might happen somewhere closer to 2040 or at least in our lifetime.[4] Although there are even more optimistic assumptions that AI will have passed the Turing Test by 2029.[5]

Traditionally, it is believed that the first to introduce the concept of AI was John McCarthy, who used it to refer to machines that can think autonomously.[6] Further with the deepening of knowledge and improvement of technology approaches (in particular, the appearance of computers, chatbots, autopilots, voice assistants, and so on) leads us to the need of more consistent and profound interpretation of AI as a phenomenon.[7]

Nowadays AI may be understood as: "…machines that respond to stimulation in accordance with traditional human responses, considering the human capacity for *contemplation, judgment, and intent*. Each such machine should engage in critical appraisal and selection of differing opinions within itself. Produced by human skill and labor, these machines should conduct themselves in agreement with life, spirit and sensitivity, though in reality, they are imitations."[8] Some authors, for example, also emphasize that AI systems "operate in an intentional, intelligent, and adaptive manner"[9].

These ideas and approaches try to convince us that AI indeed has the potential of making decisions (or imitating the decision-making process) that is characteristic of humans. Such definitions reveal the essence, purpose, and content of AI rather than its formal side.

There are also some proposals regarding the definition of AI that may be useful in the field of policy-making purposes.

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[1] In this article the term "works" means "literary and artistic works" as it is defined in the art. 2(1) of Berne Convention and also "computer programs" and "compilations of data (databases)" in the meaning of the art. 4, 5 of WCT (1996) without prejudging its status as a copyrighted work.
[2] Islam (2014).
[3] Hruska (2018).
[4] Todorović (2015).
[5] Kurzweil (2002).
[6] McCarthy / Minsky / Rochester / Shannon (2006).
[7] For the history of AI see: Mondal (2020).
[8] Shubhendu S. / Vijay (2013), p. 28.
[9] West / Allen (2018).

So, Revised Issues Paper on Intellectual Property Policy and Artificial Intelligence (May 29, 2020) offer to consider AI as "a discipline of computer science that is aimed at developing machines and systems that can carry out tasks considered to require human intelligence, with limited or no human intervention".[10]

At the EU level in its Communication on AI for Europe the European Commission provided the first definition of AI: "AI refers to systems that display intelligent behaviour by analysing their environment and taking actions – with some degree of autonomy – to achieve specific goals. AI-based systems can be purely software-based, acting in the virtual world (e.g. voice assistants, image analysis software, search engines, speech and face recognition systems) or AI can be embedded in hardware devices (e.g. advanced robots, autonomous cars, drones or Internet of Things applications)".[11]

This definition was further detailed by the High Level Expert Group.[12]

To compare the USA went further and even a Bill was introduced in May 2019 to establish a coordinated Federal initiative to accelerate research and development on artificial intelligence for the economic and national security of the United States, and for other purposes.[13]

It is proposed to consider AI as a collective concept that covers any of the following categories:

(A) Any artificial system that performs tasks under varying and unpredictable circumstances without significant human oversight, or that can learn from experience and improve performance when exposed to data sets.

(B) An artificial system developed in computer software, physical hardware, or other context that solves tasks requiring human-like perception, cognition, planning, learning, communication, or physical action.

(C) An artificial system designed to *think or act like a human*, including *cognitive architectures and neural networks*.

(D) A set of techniques, including machine learning, that is designed to *approximate a cognitive task.*

(E) An artificial system designed to act rationally, including an intelligent software agent or embodied robot that achieves goals using perception, planning, reasoning, learning, communicating, decision making, and acting.[14]

Undoubtedly, the attempt to regulate AI at the legislative level deserves attention and separate analysis. Most curious for the purposes of the possibility of the legal protection of works created by AI are points C and D, laying the idea of the possible imitation or copying of cognitive functions and neural connections (networks) inherent in humans, which likely creates

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[10] WIPO Paper on IP Policy and AI (2020), p. 3.
[11] Artificial Intelligence for Europe (2018).
[12] WHITE PAPER On Artificial Intelligence (2020), at (47) "Artificial intelligence (AI) systems are software (and possibly also hardware) systems designed by humans that, given a complex goal, act in the physical or digital dimension by perceiving their environment through data acquisition, interpreting the collected structured or unstructured data, reasoning on the knowledge, or processing the information, derived from this data and deciding the best action(s) to take to achieve the given goal. AI systems can either use symbolic rules or learn a numeric model, and they can also adapt their behaviour by analysing how the environment is affected by their previous actions".
[13] Artificial Intelligence Initiative Act (2019).
[14] Ibid., sec. 3(1).

arguments in favour of "AI-positivists" to a field for discussion about the originality and nature of the created works.

One of the main problems associated with the development of a uniform definition for AI is an ongoing technical and technological process, which is sometimes accompanied by an objectively complex process of anticipating possible discoveries and changes.

In other words, we cannot reliably predict in advance which way AI will be developed in the future, which means we shall be as "technologically neutral" as possible and take into account the "cross-sector" and multi-functioning application of AI when developing the definition of AI for regulation purposes. In this regard, it seems reasonable the suggestion that "form of legislative flexibility should therefore be promoted to take account of the multifaceted reality of AI and create a framework that is future-proof (catering for further technological progress)"[15]. Thus, the development of a single definition of AI for legal regulation is an open question that will have to be resolved in the far or near future.

1.2. Types of AI

Nowadays, the word "AI" refers to a lot of different systems-from a neural network for image recognition to autopilots or a bot for a computer game. For this reason, we should consider that AI is not something unified in its structure, functionality and purpose.

Thus, depending upon the independence and the "creativity" of the given software or hardware, we can differentiate between strong (full), general or weak (narrow) AI.[16] Strong (full), general AI is also known as artificial general intelligence ("AGI") and general or weak (narrow) AI - as artificial narrow intelligence ("ANI").

ANI specializes only in one or more related areas, so it is considered narrow. Examples of ANI include *inter alia* voice and virtual assistants, programs that recognize faces and images, Internet search engines, Internet and computer algorithms and others. Moreover, even today ANI can perform specified tasks such as generating artworks and music, writing news and novels, driving innovation processes and executing product suggestions and purchasing services.[17]

While ANI may seem intelligent, they operate under a narrow set of constraints and limitations. Ultimately, ANI doesn't mimic or replicate human intelligence, it merely simulates human behaviour based on a narrow range of parameters and contexts.[18] In other words, ANI functionality is predicted and quite limited - ANI programs can only perform the function for which they were programmed or instructed. This is exactly mainly where we are now (yet).

To illustrate the diversity of AI in the context of the ability to create content, a couple of examples of the last results achieved by AI - independently (as far as possible) or with the human intervention will be presented. So, in the field of fine arts, the creation of AICAN (Artificial Intelligence Artist and a Collaborative Creative Partner)[19]. AICAN is based on an algorithm that allows it to analyse and compare the works of "human authors" previously uploaded to the system for further independent image creation. AICAN independently selects the style, plot, composition, colours, and texture and can even give individual names to its images. Interestingly, the majority (75%) of visitors of the exhibition "Art Basel"

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[15] Report on IPR for development of AI technologies (2020), at Explanatory Statement. This statement was further supported in European Parliament resolution on IPR for development of AI technologies (2020).
[16] Mezei (2020), p. 4.
[17] Kempas (2020).
[18] O'Carroll (2017).
[19] See https://www.aican.io/

thought the AICAN-generated images had been produced by a human artist and one of the artworks ("St. George Killing the Dragon") was even sold for 16,000 USD.[20] There are some curious plans and successes of AI in musical production[21] and theatre[22] and film industry[23]. We may see how even now separate AI systems can act relatively autonomous and unpredictable and, as mentioned above, "create" works.

In turn, AGI is the concept of a machine with general intelligence that mimics human intelligence and/or behaviours, with the ability to learn and apply its intelligence to solve *any problem*.[24] Thus, AGI should be applied to machines that can perform any intellectual activity like humans.

It is generally believed that the goal of creating an AGI has not yet been achieved and is unlikely to be implemented soon. To illustrate, a survey of artificial intelligence experts recently (2019) predicted the expected appearance of an AGI only by 2060.[25] Interestingly, a similar question asked in 2012 showed more sceptical results – 2075 (90% of respondents).[26]

ToMnet (Theory of Mind neural network) can become one of the foundations of AGI development. This concept is based on the idea of "meta-learning" to "build models of agents that [trained machine] encounters, from observations of their behaviour alone".[27] This approach should allow the collection of data on hidden characteristics and mental states of agents, which will improve predictions about their future behaviour.[28] Perhaps such an approach will eventually "teach" AGI to see and understand people's needs, reasoning, feelings, and desires.

Without going into the assessment of the usefulness/danger of the emergence of AGI and its impact on humanity, in the author's opinion, achieving AGI in one form or another looks feasible. Current trends in the form of rapidly growing technology and computing power (including quantum computing), popularization of research in the field of brain structure and functioning and the relatively slow process of human brain evolution (despite its multidimensional nature and complexity) can lead us to the fact that AGI will become a reality in the distant or near future.

However, AGI may not need in the future to completely copy or imitate the internal processes of the human brain or even replace a human, for example, to create works of art or generate valuable ideas. Moreover, it cannot be ruled out that AGI can be independent of any human intervention in AGI's ability to create content and generate ideas and, therefore, will be able to achieve an almost unlimited range of eminent results.

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[20] Elgammal (2019).
[21] For instance, OpenAI project "Jukebox" - a neural net that generates music, including rudimentary singing, as raw audio in a variety of genres and artist styles. So far, it takes about nine hours to write one minute of a Jukebox song (see https://openai.com/blog/jukebox/). The second example is "AIVA"- commercial project allowing to create personalised soundtracks with AI (https://aiva.ai/).
[22] THEaiTRE project -a starting project aimed at automatic generation of theatre play scripts.
For more details see Rosa (2020).
[23] The five-minute film was "Zone Out" written, performed, scored, directed and edited entirely by an AI programme named Benjamin. Despite the remarkable nature of this experience the cultural and artistic value is very ambiguous. For more details see Staff (2018).
[24] O'Carroll (2017).
[25] Dilmegani (2020).
[26] Ibid.
[27] Rabinowitz (2018), p. 1.
[28] Ibid., p.2

2. IPR protection and existing barriers to the provision of protection for AI-generated content in the frame of the current copyright model

2.1. General overview

In the context of widespread computerization and technologization, the use of AI for generating and creating various content is no longer something new for many people. Depending on its nature and purpose, such content may theoretically be subject to legal protection, whether under the copyright or patent system (inventions, designs) or other regimes (trade secrets, trademarks).

It is essential to have a closer look at the current approaches to legal regulation of the copyright protection of works created using AI or created by AI autonomously. In this regard, it is important to distinguish between AI-assisted human creations and creations autonomously generated by AI.[29]

In general, depending on the degree of human involvement in the process of creating works using AI, 3 situations can be stated:[30]

1. Works created by humans using AI as a tool.
2. Works created independently by AI but controlled by humans.
3. Works entirely generated and selected by AI.

Works created by humans using AI as a tool.

It is generally accepted that works which are AI-assisted human creations (i.e. when AI is a means, tool, or device that allows or facilitates the creation of a work conceived by the author-human) should be protected under the current copyright system since, in the end, such a "machine" can be traced to author-human.[31] With this concept, the basis of copyright (authorship, originality, legal personality of the author, the exploitation of economic and moral rights) generally fits into the current paradigm of copyright and does not undermine its foundations.

Works created independently by AI but controlled by humans.

In this situation, AI is considered not as just a tool, but as a kind of complex system capable of some degree of independence. Although the main work can be performed by the AI itself human intervention is still in general inevitable at the current stage of AI creativity.[32]

The author believes that such intervention or "control" can be carried out both:

- ➢ at the start - when a human instructs or programs the AI to achieve a certain result, including teaching it, loading the necessary data, etc.; and
- ➢ at the stage of implementation (stage of creation) - when a human can "calibrate" the direction of AI workflow or make changes to the AI algorithm and its implementation, or even to choose between the alternatives proposed by AI (although there may be situations when these processes are fully automated and free from human intervention); and

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[29] European Parliament resolution on IPR for development of AI technologies (2020), paragraph J.
[30] Sólyom (2019).
[31] The legislation of some countries already explicitly establishes this approach. For example, in accordance with section 9(3) of CDPA 1988 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*.
[32] He (2020), p.4.

➢ at the final stage - when a human can take the results and, for example, then adapt them to the final version or program AI again for such adaptation.

Under such a system, depending on the degree and stage of human involvement, the traditional "creative process" itself may be blurred and the focus may shift in favour of human participation only at the final stage - the stage of "creative result". In the end, this "loosens" the traditional paradigm of "creative process - creative result", which theoretically can generate a discussion about the fulfilment of the criterion of "originality" of such work for copyright protection.

However, it can be assumed that despite the relatively "passive" role of a person in such a system of interaction, a person should rather be recognized as an author if he/she makes any sufficient creative choice during the process of creating a work. So, taking into account the practice of the EU case law, certainly possible that human involvement will be sufficient for copyright protection "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".[33]

In this regard, Ágnes Sólyom mentioned a reasonable point: "the right to pick from a series of AI-generated works does not make the chosen work original. This type of AI-created works may not fall under copyright protection".[34] So, it is obvious that such a person's contribution to the purpose of copyright protection should be considered case-by-case.

Works entirely generated and selected by AI.

As shown earlier, we are still at the stage of ANI dominance. For this reason, we cannot fully (yet) assert the degree of absolute autonomy of AI during the entire full cycle of the creation process.

At the same time, when AI technologies become "mature", a certain degree of autonomy can be achieved and, consequently, such AI-generated works will most likely have a greater connection with the AI itself than its developer (owner, user), since AI will use its views, insights, accumulated experience or some form of consciousness in the process of creating a work.[35]

This "autonomy" of AI can appear in the choice of style, form, type of work, its content, composition, name, and so on. So, according to Daniel J. Gervais, autonomy means that AI "is no longer a tool in the user's hands or a reflection of its (human-made) program".[36] Further, he suggests that "characteristics of autonomy include the ability to make independent decisions or draw conclusions to come to conclusions derived from information gathered by the decision-maker"[37]. In other words, he implies a machine that is making the relevant choices.

The author of this article argues that in general (without rejecting the above arguments), autonomy should rather be expressed in the non-interference of a person in the creation process itself and the choice of a specific final result of the work, including the

[33] Case C-5/08 - Infopaq International A/S v. Danske Dagblades Forening, paragraph 45.
[34] Sólyom (2019).
[35] Undoubtedly, the dependence of AI on a person is still significant (at least at the initial stage of its development) - AI cannot exist without the initial code, AI cannot "train" itself independently from the scratch (i.e., it depends on at least the initial choice and adjustment of training technology (machine-learning) and the materials that are provided to it), but as it develops, such dependence may become less strong and visible.
[36] Gervais (2019), p. 10.
[37] Ibid., p. 51.

choice between alternative options (if applicable). Moreover, the mere possibility of exclusively technical assistance/human intervention in the process of creating a work of AI, rather, should not be considered as a contribution to the work due to its secondary and exclusively auxiliary to AI role, and therefore, probably, should not itself grant any copyright protection in respect of AI-generated works to such persons in the current copyright paradigm.

2.2. Existing barriers to the provision of protection for AI-generated works

There are many barriers and problematic issues related to the hypothetical possibility of protecting AI-generated works within the current copyright system (authorship, originality/creativity, vesting and exploitation of economic and moral rights, terms of protection, limitations and exceptions (fair use), the possibility of infringement of the interests of human authors, etc.). However, the article focuses only on several basic issues, namely authorship and originality/creativity, since they are paramount and to a certain extent predetermine all the other issues related to the protection of AI-generated works.

2.2.1. The concept of authorship

It should be noted first that in the context of copyright, the concept of authorship and in particular "author" is central and inseparable from the work itself since every work must have an author to enjoy protection. Also, the concept of the author is closely related to the category of "ownership" of the rights.

The Berne Convention does not define the "author" of a work, leaving this to the contracting parties, but its text and historical context strongly suggest that the Berne Convention reserves "authorship" to human beings. So, the human-centred notion of authorship presently enshrined in the Berne Convention embodies a fundamental human right, namely that of the creator over the work he or she creates.[38] To put it differently, the "author" and "authorship" for purposes of the Berne Convention refer to the natural person who created the work – "who, notwithstanding the constraints of her task, succeeds in exercising minimal personal autonomy in her fashioning of the work".[39]

The human-centred approach to the category of "author" looks logical, understandable and pragmatic at the same time – it allows us to clearly define who is the creator of the work and, consequently, who can be endowed with economic and moral rights to the works and who is able of its exploitation (since the natural person is the subject of law and not the object). Moreover, the anthropocentric approach is also confirmed, for instance, by the mechanism for determining the terms of protection of works via the certain term after the death of the author (contrary, it is obvious that the AI cannot pass away in its literal meaning).

In fact, for international regulation, such human-centred approach to the concept of authorship means that the Berne Convention does not in any way impose upon contracting states an obligation to accord copyright protection to AI outputs that are not the result of any act of human authorship ("purely computer-generated works").[40]

There are at least 2 following main challenges for the protection of AI-generated works in this regard.

First, the author is only a human being and copyright law requires the work to "show

[38] Ricketson (1991).
[39] Ginsburg (2003), p. 29.
[40] Ginsburg (2018), p. 132.

authorship" - the personal stamp of the author.

Thus, the USA,[41] EU secondary legislation[42] and national jurisdictions of different countries (for instance, Russia, Belarus) explicitly at the legislative level or via interpreting acts when defining the author emphasize that the author is only a human being.[43] In the USA there was even case law regarding the concern over non-human authors.[44]

On the other hand, under the EU copyright law, there is no explicit authorship requirement and the concept of authorship in EU copyright law is linked mostly to the originality requirement.[45] Nevertheless, the CJEU has on various occasions suggested that the notion of "author" is reserved for a human creator, not a legal entity such as a film producer or publisher, let alone an AI system or a robot (in particular, CJEU Luksan and CJEU Reprobel)[46].

Second, initial copyright in a work is granted to its author.

The right holder must have legal personality. AI has no legal personality and it is not possible to endow AI with rights of any kind, including ownership rights. Some scholars argue as a possible option to attribute the AI authorship but not ownership of IP rights, with the ownership probably being assigned by default to the AI's owner.[47]

However, despite the possible variations and quasi-constructs associated with attribution of authorship, an equally important problem is compliance with the criterion of originality, which should undoubtedly be considered inseparably from authorship.

2.2.2. Originality/creativity requirement

For work to be protected under the copyright regime is necessary to pass the originality test. That is considered as the underlying condition to be granted copyright protection.

The Berne Convention, which is the basic and main international source for the protection of works, indicates that the criterion for the protection of works is its "originality"[48]. However, the interpretation of the term originality is not given. Therefore, the understanding of originality varies from country to country.

Nevertheless, it is generally assumed that the Berne Convention's definition of work implies a requirement of human intellectual effort or creativity.[49] This prerequisite, however, does not exclude intellectual productions made with the aid of machines.[50]

Within the EU framework, the originality criteria are reflected both in case law and

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[41] See for instance § 313.2 of US Copyright Office (2017): "To qualify as a work of "authorship" a work must be created by a human being. . . . The Office will not register works produced by nature, animals, or plants. . . . Similarly, the Office will not register works produced by a machine or mere mechanical process that operates randomly or automatically without any creative input or intervention from a human author."

[42] For instance, in relation to software and databases see art. 2 of EU Software Directive, art. 4 of EU Database Directive.

[43] For instance, in Russia the author is a *citizen* whose creative work created such a result (art. 1228(1) of Civil Code of the Russian Federation (Part 4). In Belarus the author is a natural person whose creative effort has created a work (art. 4 of Belarusian Copyright Act (2011).

[44] Naruto v. David John Slater et al.

[45] Bonadio / McDonagh (2020), p. 117.

[46] Trends and Developments in AI (2020), p. 70.

[47] Bennet / Daly (2020), p. 74.

[48] For instance, art. 2(3) of the Berne Convention.

[49] Trends and Developments in AI (2020), p. 68.

[50] For instance, art. 2(1) of the Berne Convention recognizes protection of photographic works as well as cinematographic works.

also in certain acts of the EU legislation.[51]

Speaking of case law the originality criteria was explained in *Infopaq* as following: "... works such as computer programs, databases or photographs are protected by copyright only if they are original in the sense that they are their *author's own intellectual creation*.[52] The originality was further examined in other cases via "*author's personal touch*"[53] or "*reflecting the personality* of its author, as an expression of his *free* and *creative choices*"[54] At the same time the EU copyright law's focus on the act of creation in terms of making free and creative choices necessarily implies that economic investment cannot, as such, justify protection.[55]

Therefore, for passing the originality test[56] under the EU framework both conditions shall be met: creation is "intellectual" and at the same time "author's own".[57] To be protected, no test should be applied regarding its quality or aesthetic nature.

Author's "own intellectual creation" means that originality is not concerned with whether the work is novel or inventive, it only requires the work to be originated from the author (i.e. not copied from elsewhere). To put it differently, several authors may come to the same creative result, but if each of them makes their own creative path, then everyone can claim to protect their work.

Moreover, it is hard to deny that the emphasis on the author's "own intellectual creation" and "personal touch" also suggests that the originality requirement involves some degree of human authorship.[58]

To compare, the USA currently holds an originality position somewhere in between "personal touch" and "sweat of brow" principle, requiring that the work should be considered original plus at least some minimal degree of creativity.[59] Daniel J. Gervais summarizes the notion of creative choices in Feist Publications v Rural Telephone Service (1991) as follows: "a choice is creative if made independently by the author and that is not dictated by the function of the work, the method or technique used, or by applicable standards or relevant good practice. Purely random, arbitrary or insignificant selection is insufficient."[60]

As shown above, basically the core idea to the issue of originality is handled the

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[51] For instance, under art. 1(3) of EU Software Directive: "A computer program shall be protected if it is original in the sense that it is the *author's own intellectual creation*."

[52] C-5/08 Infopaq International A/S v Danske Dagblades Forening, at (35).

[53] Case C-145/10 - Eva-Maria Painer v. Standard Verlags GmbH and Others, at (92).

[54] Case C-683/17 - Cofemel – Sociedade de Vestuário SA v. G-Star Raw CV, at (30).

[55] Trends and Developments in AI (2020), p. 71.

[56] Many scholars use a bilateral approach assuming that the whole concept of originality includes "originality itself" (independent creation) and "creativity" (at least minimum clever). For more details see Buccafusco (2016), p. 1276.
According to *Tatiana-Eleni Synodinou* in the context of the EU framework: "[T]he debate about objective and subjective approaches to originality could be also reformulated in the form of 'originality standards', such as the 'sweat of the brow' and the 'skill and judgment' standard, which mainly reflect an *objective conception of originality* and the 'creativity' and the 'personality' standards which are the core of *subjective originality*" (see Synodinou (2012), p. 94-96).

[57] According to David Nimmer: "'[O]riginality' means that the work derives from the copyright owner, as opposed to that individual having copied it from a previous source, while 'creativity' refers to a spark above the level of the banal." (see Nimmer (2001), p.14-15).

[58] Bonadio / McDonagh / Arvidsson (2018), p. 667.

[59] He (2020), p. 5.

[60] Gervais (2019), p. 43.

similar way both in the EU and in the USA.

In the future, the copyright system will find itself under increasing pressure when AI-generated creations are qualified as more attractive or better than human creations. In this regard the following question arises: should we deprive AI-generated works just because creations should only be those of a human being's (assuming the hypothetical possibility of AI systems to demonstrate to a certain degree behavioural stereotypes related to human intelligence including reasoning, learning, perception and creativity)?

Some scholars have a negative attitude to the AI capability of making free and creative choices in the context of copyright.[61] At the same time, part of the problem with whether AI can be creative depends almost entirely on how creativity is defined and what approach shall prevail.

Mukhles M Al-Ababneh after analyzing the concept of creativity as a phenomenon and the modern views to it comes to the following main conclusions. Firstly, creativity is commonly regarded as the production of novel and useful ideas or problem solutions (novelty and usefulness). Secondly, there is no agreement about where creativity is located in a process, a product or a person. Thirdly, creativity includes two principles "problem finding" and "problem solving", and creativity needs several skills and talents. Fourthly, creativity can also be divided into 3 types: creating something new, combining things together, and improving or changing things. Lastly, individuals may have high creativity if they have the personality traits of creative people and therefore creativity has been perceived in different ways as mental ability, a process and human behaviour.[62] Thus, creativity is a fairly agile and abstract concept and the possibility of its application to AI and the results of its activities *per se* most likely should not be completely excluded.

Some authors also suggest recognizing the creativity of AI in the works AI creates considering the following. On the one hand, the subjective approach to originality criteria is blurred and in fact, it is difficult to assess and judge it from outside.[63] On the other hand, it is proposed to use an objective approach to originality when deciding whether to consider the creativity of AI, thereby moving away from the subjective criterion of originality. Finally, this conclusion implies that "originality may not be a hurdle to recognizing works created by autonomous creative robots as copyrightable".[64]

Despite existing discussions and suggestions regarding the scope and approaches to the assessment of originality for copyright purposes, the main conclusion that can be drawn in the context of the requirement of originality/creativity under the existing traditional paradigm of copyright is that it is evaluated given that the author of the work is exclusively a human-being. Thus, even if it is possible to recognize the results of AI activity as creative (given the relatively low threshold requirements for the criterion of originality), in any case,

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[61] Vehar / Gils (2020), p. 720: "Even a strong AI system will function along some predefined (technical) rules (eg an algorithmic function). The fact that it may generate an outcome which is unexplainable or unforeseeable does not make such outcome 'free or creative' in the copyright-sense. It just indicates that the AI system surpassed the level of immediate human understanding, while it will still be functioning along those human-imposed rules".

[62] Al-Ababneh (2020).

[63] Yanisky-Ravid (2018), p. 49: "[D]iscussing human beings as creators, we cannot determine originality (based on subjective criteria) with complete certainty, a conclusion that is also true for discussing creative robots as creators".

[64] Ibid., p. 50: "[W]e think that the conclusion on whether or not creative robots should be entitled to copyright in the works they produce depends on whether one views originality from a subjective or objective perspective. Our conclusion is that the objective perspective of originality is a more measurable and efficient tool than the subjective approach."

such creative outcomes cannot find a place as works protected under the copyright regime.

To sum up the debate to the existing barriers to copyright protection of AI-generated works, it should be admitted that these barriers potentially arise only in a situation when independently generated AI works take place (it is hardly possible to talk about complete autonomy of AI works generation now) or a situation when "the machine input materially outweighs that of the human which uses it, i.e. where the level of human intervention in the creative process is minimal and when that of the robot is predominant".[65] Therefore, lacking "human involvement" may result in no copyright for such a work vested to a human nor AI. To put it differently, autonomously or independently AI-generated works are deprived of protection under the existing copyright regime.

3. Possible ways and models for the protection of AI-generated content

There are already different ways and models offered and discussed to protect AI-generated content. Possible suggestions and alternative ways to resolve the situation with the protection of AI-generated content are numerous. Some of them even offer protection outside the scope of copyright, for instance in the framework of unfair competition[66] (however they are no less relevant).

This article will cover only some of the possible options.

3.1. Works made for hire

One of the suggestions is to carve out another authorship right for users of the AI that generated contents.

Yanisky-Ravid supporting this approach highlights that "AI systems should be seen as the creative employee or self-contractor creators working for or with the user—the firm, human, or other legal entity operating the AI system. On the one hand, this proposal reflects and maintains the human features of the AI system, such as independence, creativity and intelligence. On the other hand, this proposal ensures that the employer or the user maintains the appropriate rights and duties, which include accountability for the outcomes of the AI system. This may be the best solution to the current problem of a lack of accountability for independent AI systems".[67]

The work-for-hire approach, according to which the "machine might be analogized to an author "employed" to create, seems a simple and elegant solution to identify a proxy human author and sidestep the originality analysis".[68]

Annemarue Bridy suggests that even though work made for hire does not provide a perfect fit to the situation in question, it can be more easily modified without undue collateral expansion of the scope of copyrightable subject matter on the one hand and also avoids the predicament of vesting rights in a machine.[69]

He further notes the work made for hire doctrine is a more fitting framework within

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[65] Bonadio / McDonagh / Arvidsson (2018), p. 668.

[66] Mezei (2020), p. 18: "Japanese legislative proposal to introduce a "non-human-created IP" regime to cover AI-generated outputs, according to which "[r]ather than extending the copyright system, the policy body will look into a framework that handles works created by AI in a manner *similar to trademarks*, protecting them from unauthorized use through *legislation prohibiting unfair competition*", and "the plan is to grant protection only to properties that achieve a certain degree of popularity or otherwise hold market value, in light of AI-based systems' ability to create an enormous body of work in a short time".

[67] Yanisky-Ravid (2017), p. 671.

[68] Gervais (2019), p. 46.

[69] Bridy (2012), p. 25.

which to situate the problem of AI authorship because:

1. it represents an existing mechanism for *directly vesting ownership of a copyright in a legal person* who is not the author-in-fact of the work in question.
2. for works of AI authorship, treating the programmer like an employer – as the author-in-law of a work made by another – would avoid the problem of vesting rights in a machine and ascribing to a machine the ability to respond to copyright's incentives
3. it would also avoid the expedient logic that conflates the author's author (i.e., the programmer) with the actual author (i.e., the generative program).[70]

It can be assumed that this approach, although it is a kind of legal fiction, in many ways cannot become a universal solution for all jurisdictions, since the concept of work for hire in its traditional sense is not reflected uniformly in all the national legislations.

In particular, one of the problems is the difference in the moment when the rights of the employer arise – some jurisdictions assume transition (i.e. succession) from the human author, while other jurisdictions assume the initial (without any transfer) occurrence of rights immediately from the employer. On the other hand, a work for hire approach should rather be based on the presumption that the content being generated can eventually be considered as copyrighted work. However, as discussed above the problem with the originality test is not yet resolved.

3.2. Computer-generated works

This approach to protecting computer-authored works is already recognized in some common law jurisdiction, in particular, the United Kingdom, New Zealand and Ireland and quite similar to the work for hire model mentioned above.

Under the provisions of section 178 of CDPA 1988 "computer-generated" works are those being "generated by a computer *in circumstances such that there is no human author of the work*". Further, section 9(3) CDPA 1988 provides that "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*".

Moreover, CDPA 1998:

1. establishes the special rules for the duration of copyright in literary, dramatic, musical or artistic works. Under section 12 (7) "copyright expires at the end of the period of 50 years from the end of the calendar year in which the work was made".
2. denies moral rights to computer-generated works. Sections 78 and 81 states that the right to be identified as an author and right to object to derogatory treatment of work respectively, do not apply to any computer-generated works.

The relationship between section 9(3) CDPA 1988 and the originality requirement has not been considered by the English courts and academic commentary varies and broadly splits into three camps:[71]

1. The first focuses on the creative efforts of the persons making the arrangements.
2. The second suggests that there is no originality requirement for computer-generated works.
3. The third proposes that the originality of computer-generated works should be assessed

[70] Ibid., p.26
[71] Bond / Blair (2019).

objectively, i.e. would the creation of the same work by a human have satisfied the originality requirement.

In the academic community, there are some doubts about the usefulness and effectiveness of the proposed "UK model" for regulating the issue of protecting content generated by AI. While this approach resolves the problem of the vesting author's rights to the person, it involves establishing a link between a particular person and its "necessary preparations" (whose preparations it should be and what is the threshold of "necessity"?), which is generally accompanied by difficulties, on the one hand, in drawing a clear distinction between works of human authorship (when AI is just used as "tool") and computer-generated works where there is no human authorship and, on the other hand, in the lack of established judicial practice and case law that could offer clearer guidance on the interpretation. At the same time, it is unclear (as shown above) how the originality standard should apply in case of computer-generated content.

3.3. Related rights

Related rights are also regarded as a useful tool for the protection of AI-generated content in cases where AI outputs do not qualify for copyright protection.

One of the advantages of related rights regime is existing recognition and protection thereof under the umbrella of international treaties, in particular Rome Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations (1961), Convention for the Protection of Producers of Phonograms Against Unauthorized Duplication of Their Phonograms (Geneva, 1971), the WIPO Performances and Phonograms Treaty (1997) and Agreement on Trade Related Aspects of Intellectual Property Rights ("TRIPS") (1994).

Related rights are exclusive rights "relating" copyright that provides for copyright-like protection of persons or entities operating in the creative industries that do not qualify as creators of copyright-protected works. The major difference between related rights and copyright in this context is that related rights do not require originality or authorship.[72]

The classic European related rights break the anthropocentric system of copyright law by granting separate rights to producers of films, sound recordings and other corporations, e.g. broadcasting organizations; and by allowing for the transfer of copyrights of authors and performers to the related rights holders at the same time.[73]

Related rights cover contents that are not qualified as copyright works, but protection thereof is justified. Protection may be justified for those "cultural achievements which are important for the communication of works and which, in view of their equally immaterial nature, appear to be equally worthy of protection."[74]

For instance, German law distinguishes "photographic works, including works produced by processes similar to photography" (*'Lichtbildwerke'*)[75] and photographs (*'Lichtbilder'*)[76]. The latter "understood to be the photographer or the person who has determined the technical conditions for the photograph and set up the recording equipment"[77] and may enjoy protection beyond copyright (i.e. under related rights). To put it differently, the photographs have a lack of originality (*non-original*) in the sense of unique artistic view and

[72] Trends and Developments in AI (2020), p. 88.
[73] Mezei (2020), p. 13.
[74] Vehar / Gils (2020), p. 722.
[75] German Copyright Act, art. 2(1)5.
[76] Ibid., art. 72.
[77] Vehar / Gils (2020), p. 722

creative efforts to suffice for copyright protection. Similarly to photographs and photography, German law distinguishes cinematography works and moving pictures (sequences of images and sequences of images and sounds which are not protected as cinematographic works).[78]

At the same time, some authors suggest that in the case of using the mechanism of related rights for AI outputs, to enrich public domain the "duration of related rights to AI-generated contents can be shorter and the exclusive rights granted can be lesser when compared with copyrighted works, thereby allowing the public to freely utilize the AI-generated contents much earlier".[79]

Ultimately, the related rights framework will not affect or prejudice the originality standard attributable to copyrights protection and in fact, provide a certain degree of protection to AI-generated works. In particular, related rights offer the possibility to "legitimate" and compensate these types of contributions, investments and expenses regarding AI content generation and to promote the distribution thereof.

Despite this, some authors rightly emphasize that "introducing new rights or expanding existing related rights to protect AI outputs that do not qualify for protection under existing EU copyright or related rights regimes, would be justified only if the solid empirical economic analysis were to reveal that the *absence of legal exclusivity negatively affects overall economic welfare*. This might be the case if the risks of copying and free-riding would deter investment in AI productions to such an extent that the positive welfare gains of broad public access to public domain AI outputs are overshadowed."[80]

To conclude, although related rights may be a useful, flexible and effective mechanism for protecting AI-generated content through granting certain limited economic rights, additional analysis is needed for the types of AI-generated content to be covered, the terms of granting protection, the types of right holders, the list of economic rights to be granted, etc.

3.4. Sui generis rights[81]

Discussion about the introduction of a new sui generis system for the protection of AI-generated works held even at the international level. WIPO in Revised Issues Paper on Intellectual Property Policy and Artificial Intelligence raise the question should a separate sui generis system of protection should be envisaged for original AI-generated literary and artistic works and, whether in the event copyright cannot be attributed to AI-generated works or that the works are protected by a sui generis system of protection if this would incentivize concealment of the involvement of AI and how such behaviour could be detected?[82]

One of the proposals is to develop separate sui generis rights for a limited time protecting output created by AI embedded machines and robots, similar to the EU database

[78] German Copyright Act, art. 95.
[79] He (2020), p. 18.
[80] Trends and Developments in AI (2020), p. 95.
[81] It should be noted that the sui generis regime provided in the EU for a particular type of database is not the only possible way to protect such databases. For example, the Russian Federation recognizes the need to protect databases in respect of which significant investments have been made but the regime of related rights (not a separate sui generis regime) is chosen as the legal framework (art. 1304, 1333-1336 of Civil Code of the Russian Federation (Part 4). However, not all countries recognize the need to protect given databases at all and provide protection only for databases that are the result of creative work are protected (for instance, like in Belarus).
[82] WIPO Paper on IP Policy and AI (2020), Issue 7.

right which aims at protecting investments.[83]

Sui generis rights are expected to create conditions to incentivise and reward the investments made in the development of AI.[84] The EU Database Directive recognizes protection for databases under the condition that *substantial* investment in obtaining, verifying, or presenting the contents has been made.[85] Either obtaining, verification or presentation of the contents is enough for protection. However, the CJEU clarified (in relation to cases concerning schedules of sports events ("fixtures")) that investment *not* in obtaining, verifying or presenting the contents of the database, but in generating its contents, does not count towards substantial investment. In other words, investment in creating the contents of a database may not be taken into account.[86]

Beneficiaries of protection under the sui generis right for a database is "maker of database" – the person who takes the initiative and the risk of investing.[87] In particular, the maker of the database has the exclusive right to prevent extraction and/or re-utilisation of the whole or a substantial part, evaluated qualitatively and/or quantitatively, of the contents of the database.[88] The exclusive right mentioned above shall run from the date of completion of the making of the database and granted for 15 years.[89] Taking into consideration that the EU Database Directive does not rely on human authorship as a condition for the protection of databases, it thereby allows for protection of "databases" generated by AI if other conditions are met.

For this reason, the underlying ideas, exclusive rights and exceptions proposed by the EU Database Directive *mutatis mutandis* can be used as a basis for developing a separate sui generis system for content generated by AI other than databases. However, separate deep analysis is needed to assess the marketability of AI-generated outputs and possible negative effects (if any) to the humans and their creative efforts before granting sui generis protection.

Concluding remarks

A constantly developing system of technologies and AI that is gaining potential and becoming more and more versatile and multi-faceted will eventually exacerbate the problem of protecting the content generated by AI. The analysis shows that the current human-centred copyright regime is not adapted to protect the content generated by AI, even if such content has the same objective external features as literary and artistic works of human authors (i.e. formally, it is a literary or artistic work) this content may not be protected due to various obstacles, including problems in originality threshold and the concept of authorship. One of the most viable and noteworthy options for AI-generated content protection under IPR umbrella which does not involve a "crack" in the fundamental ideas and principles of copyright protection under the *related rights* and separate *sui generis rights* system. However, it should be understood that *related rights* and *sui generis rights* system offer essentially a similar solution for protecting rights in relation to AI-generated content: the choice between related rights and sui generis rights system is likely to be determined by

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[83] Bonadio / McDonagh / Arvidsson (2018), p. 672.
[84] The EU Database Directive, Recital 40: Whereas the object of this sui generis right is to *ensure protection of any investment* in obtaining, verifying or presenting the contents of a database for the *limited duration of the right*; whereas such investment may consist in the *deployment of financial resources and/or the expending of time, effort and energy*.
[85] Ibid., Art. 7(1).
[86] Trends and Developments in AI (2020), p. 93.
[87] The EU Database Directive, Recital 41.
[88] Ibid., Art. 7(1).
[89] Ibid., Art. 10.

the peculiarities of legal tradition and lawmaking (as illustrated earlier by the example of the Russian Federation where instead of introducing sui generis rights for databases the scope of related rights system was extended), rather than by significant differences in the basic approaches of both regimes in relation to the protection of AI-generated content. At the same time, providing some form of protection to AI-generated content should not be a hasty decision, since there are a large number of open questions, including those related to the need to find the optimal balance between the interests of human authors and AI developers (owners), stimulating investment in AI sector and ultimately preventing a "crack" in the current copyright system.

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