

ARTICLES

INTELLECTUAL PROPERTY OWNERSHIP OF AI-GENERATED CONTENT

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Abstract

Until recently, intellectual creativity was considered as an exclusively human phenomenon and intellectual property legislation was built on the basis of motivating and enhancing human inventiveness. This self-evident assumption is being challenged due to the development of artificial intelligence technologies in the recent decades. In this article author analyzes some aspects of intellectual property law development, including the possibility of recognizing an artificial intelligence as a creator of intellectual activity results. The author examines the legal status of artificial intelligence under Armenian law and foreign intellectual property legislation, analyzes existing approaches to the legal regime and intellectual property ownership of objects created with the help of artificial intelligence. The paper aims to determine the proper right holder to content generated by artificial intelligence and formulate some policy prospects of artificial intelligence regulation. The methodological basis of the research includes general scientific and special legal methods. The author places particular emphasis on the dogmatic (doctrinal) research methods, which made it possible to analyze existing approaches to protection of intellectual property rights. The research is also based on the comparative legal method and analytical legal method of commenting current law of Armenia and foreign countries. The results of the study allow author to substantiate that the actual right holder to the content produced by the neural network is the programmer of the underlying algorithm system. The author concludes that the construction of a solid legislative system should be carried out taking into account the specifics of the areas of application of artificial intelligence, ensuring a balance between the interests of individuals, society and the state related to the development of innovative technology.

Keywords

copyright, patents, artificial intelligence, algorithms, AI-generated works, public domain, protection of intellectual property rights

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ПРИНАДЛЕЖНОСТЬ ПРАВ НА ПРОИЗВЕДЕНИЯ, СОЗДАННЫЕ С ПОМОЩЬЮ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА

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Аннотация

До недавнего времени интеллектуальное творчество считалось исключительно человеческим феноменом, а законодательство об авторском праве опиралось на идею поощрения креативности, поддержки искусства и научного прогресса. Это аксиоматическое предположение сегодня подвергается сомнению благодаря технологиям искусственного интеллекта. В данной статье автор анализирует некоторые аспекты развития интеллектуального права за последние десятилетия, в том числе возможность признания искусственного интеллекта субъектом интеллектуальной деятельности. Автор рассматривается правовой статус искусственного интеллекта с позиций права Республики Армения и ряда иных правовых порядков, анализируются существующие подходы к определению правового режима объектов, созданных с помощью искусственного интеллекта, и принадлежность прав на них. Целью настоящей статьи является определение надлежащего субъекта прав на контент, сгенерированный искусственным интеллектом, а также формулирование некоторых перспектив правового регулирования алгоритмической генерации объектов интеллектуальных прав. Методологическую основу исследовательской работы составляют как общенаучные, так и специальные юридические методы. Особое внимание уделено догматическому и концептуальному методам исследования, позволившим проанализировать существующие подходы к защите прав интеллектуальной собственности, а также сравнительно-правовому и аналитико-правовому методам изучения действующего права Армении и зарубежных стран. Проведенное исследование позволяет автору обосновать, что правообладателем в отношении результатов интеллектуальной деятельности, созданных нейросетью, является создатель лежащего в основе системы алгоритма. В статье делается вывод о том, что построение прочной законодательной основы регулирования отношений по созданию результатов интеллектуальной деятельности должно осуществляться с учетом специфики сфер применения искусственного интеллекта, обеспечения баланса интересов отдельных лиц, общества и государства в развитии инновационных технологий.

Ключевые слова

авторское право, патенты, искусственный интеллект, алгоритмы, работы, сгенерированные ИИ, общественное достояние, защита прав на результаты интеллектуальной деятельности

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Introduction

When artificial intelligence (AI) technology is used to generate technical inventions (e.g. using evolutionary algorithms to design antennas), or to make creative works (e.g. using IBM Watson to generate songs), intellectual property (IP) law comes into play. It is well known that patents are granted for novel technical solutions and copyright is available for original creative works.

IP rights are meant to incentivize and reward activities that lead to inventive or creative output because society benefits from inventions and creative works. But where AI technology is mainly involved in the development and creation of inventions or creative works, machines do not need to be stimulated or rewarded for doing what they were programmed to do. According to the economic justification of IP rights, people may not invest resources into researching and creating new works or would not make them public without being compensated. The protection of IP calls up lots of questions in the context of AI, some of which will be raised and discussed below.

According to a study published by the World Intellectual Property Organization (WIPO) in 2019, nearly 340,000 AI-generated inventions have been patented worldwide. Over half of these patents were published between 2013 and 2018, showing a steep upward trend.¹ Machines work with varying degrees of autonomy as collaborators with humans in areas as diverse as the design of new materials, optimization of manufacturing processes, drug discovery, and the design of new household products (Vertinsky, 2017, 490). However, AI technology is also increasingly used in processes relevant to registering, administering, and enforcing IP rights. IP offices use machine learning tools to categorize incoming applications according to the technical area of the invention and type of trademark, to classify goods and services for which the mark is applied, to translate prior art documents, to search prior art or earlier rights, and to perform formality checks.²

The definition of “artificial intelligence” is far from new. At a scientific seminar at Dartmouth University (USA) back in 1956, this concept was formulated by American computer scientist Turing Award. The scientist defined artificial intelligence as the capacity of robots, as well as computer programs and systems, to perform intellectual and creative human functions, to independently find ways to solve problems, and to be able to draw conclusions and make decisions. In our opinion, this definition is quite progressive, since, according to the author, artificial intelligence is endowed with all the features of intellectual and creative human activity.

Russian scholar Andrey Yu. Alekseev presents the issues of creativity in relation to artificial intelligence technology as follows: “The issue of creativity in AI is why, how, and actually what to imitate, simulate, or reproduce in order to realize an individual or social phenomenon of human creative activity in computer technology” (Alekseev, 2013, 381).

¹ WIPO. (2019). *WIPO technology trends 2019: Artificial Intelligence*. World Intellectual Property Organisation. https://www.wipo.int/edocs/pubdocs/en/wipo_pub_1055.pdf

² WIPO. (n.d.) *Index of AI initiatives in IP offices*. World Intellectual Property Organization. Retrieved July 27, 2023, from https://www.wipo.int/about-ip/en/artificial_intelligence/search.jsp

The aim of this research paper is to discuss the main issues related to determining the IP ownership of AI-generated objects and the relevant parties in such legal relations, and the main legislative approaches to IP in the era of artificial intelligence. In this light, of particular interest is the classification used by the Max Planck Institute for Innovation and Competition (MPI) research group, which distinguishes: AI-generated inventions (where AI acts without human intervention); AI-assisted inventions (where humans use AI as a tool to invent), and AI-implemented inventions (where AI is implemented as part of the invention).³

This research paper also analyzes how we understand IP law nowadays, but also focuses on how these laws may need to be changed, if at all. It is based on doctrinal legal research, normative methods in relation to IP theories, and research of academic literature. In the research we consider approaches of different jurisdictions to addressing the issue of AI and IP correlation: the law of the Republic of Armenia, the U.S. legal system, European Union Law as well as some specific legal sources of other foreign jurisdictions (the UK, Canada). It is justified by the fact that many IP legal frameworks share similar rationales and rules due to the partial harmonization of IP laws between jurisdictions that has been achieved through international agreements.

Artificial Intelligence as an Author

Under the main document on fundamental aspect of copyright — “Berne Convention for the Protection of Literary and Artistic Works”, copyright protection applies to any work in the field of literature, science, and art, regardless of the form and method of expression.⁴

According to the Law of the Republic of Armenia “On Copyright and Related Rights”, “the object of copyright is a unique result of creative work carried out by the author independently or with other authors in the field of literature, science and [...]”.⁵ Moreover, the Law stipulates that “an author is a natural person who creates the work”⁶

Copyright Act of the United States of America states that: “Copyright protection subsists, in accordance with this title, in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device”.⁷ Thus, under U.S. federal statutory law, three mandatory features of the work can be distinguished: originality, creative character, and the need for fixation in any tangible (material) form. In the case **Feist Publications, Inc. v. Rural Telephone Service Co. Inc.** of 1991, the Supreme Court of the United States brought certainty to the perception of originality, noting two main requirements for recognizing a work as original:

³ Drexler, J., Hilty, R.M., Desauternes-Barbero, L., Globocnik, J., Otero, B.G., Hoffmann, J., Kim, D., Kullhari, S., Richter, H., Scheuerer S., Slowinski, P.R., & Wiedemann K. (2020). *Comments of the Max Planck Institute for Innovation and Competition of 11 February 2020 on the Draft Issues Paper of the World Intellectual Property Organization on Intellectual Property Policy and Artificial Intelligence*. Max Planck Institute for Innovation and Competition. https://www.ip.mpg.de/fileadmin/ipmpg/content/stellungnahmen/2020-02-11_WIPO_AI_Draft_Issue_Paper_Comments_Max_Planck.pdf

⁴ Berne Convention for the Protection of Literary and Artistic Works art 2, Sept. 9, 1886, S. Treaty Doc. No. 99-27 (as revised at Paris on July 24, 1971 and amended in 1979).

⁵ Zakon Respubliki Armeniya avtorskom prave i smezhnykh pravakh [The Law of the Republic of Armenia on Copyright and Related Rights] par.1, art. 3, OVMID RA July 12, 2006, No. 38, p. 493.

⁶ Op. cit.

⁷ Copyright Act of the United States of 1976, 17 U.S.C. §102 (a) (as amended to 23.12.2022).

- the author's work must be created by the author, and not just duplicated from another work;
- the author must make some creative contribution to his work, no matter how small the level of creativity (some minimal degree of creativity).⁸

This anthropocentric focus on human authorship is also evident in other aspects of EU law (Ramalho, 2019). Of particular interest is also a decision by the European Court of Justice (ECJ) in the case **Infopaq Int'l A/S v. Danske Dagbaldes Forening** of 2009, where the Court found that copyright applies only to original works and that the attribute of originality is revealed through the concept of "the author's own intellectual creativity".⁹ Accordingly, the original work should reflect the personality of the author.

In the **Eva-Maria Painer v Standard Verlags GmbH** case, the ECJ ruled that the free and creative activity of a photographer in choosing background, pose, lighting, and other methods of photography constitutes an "individual approach", which adds originality to a photo at the same time.¹⁰

It should also be noted that there is no doubt that it is the photographer who is recognized as the party providing the creativity in creating a photo, and not the company that produced the camera that took it, in respect of which the copyrights associated with the creation of the camera tool itself are recognized.

Thus, we conclude that copyright applies only to objects that possess a certain degree of originality. This originality comes from the author who created the work. This means that the work should be created by the author themselves, not duplicated or imitated by the work of another author, and should contain a minimal degree of creativity. For the purpose of our research, we mainly focus on the issue of whether a work created by artificial intelligence can be considered an independent work.

Artificial Intelligence as an Inventor

In 2018, Francis Gurry, former Director General of WIPO, stated:

"From a purely economic perspective, if we set aside other aims of the IP system, such as 'just reward' and moral rights, there is no reason why we shouldn't use IP to reward AI-generated inventions or creations. But this still requires some thought".¹¹

In a recent study carried out for the European Patent Office (EPO), none of the jurisdictions analyzed currently foresee an AI system as an inventor.¹² This has been further supported by the EPO's refusal of two patent applications for inventions in which DABUS (a type of connectionist artificial intelligence) was indicated as the inventor.¹³ Accordingly, the European Patent Convention (EPC) requires that the inventor designated in the application be a human being,

⁸ FEIST PUBL'NS, INC. V. RURAL TEL. SERV. CO., INC., 499 U.S. 340 (1991).

⁹ Case C-5/08, Infopaq Int'l A/S v. Danske Dagbaldes Forening, 2009 E.C.R. I-06569 (2009).

¹⁰ Case C-145/10, Eva-Maria Painer v. Standard Verlags GmbH, 2011 EUR-Lex CELEX LEXIS 12594 (Dec. 1, 2011).

¹¹ Gurry, F. (2018, September). Artificial intelligence and intellectual property: An interview with Francis Gurry. *WIPO Magazine*, 2018(5). https://www.wipo.int/wipo_magazine/en/2018/05/article_0001.html

¹² Shemtov, N. (2019). *A study on inventorship in inventions involving AI activity*. European Patent Office. https://link.epo.org/web/Concept_of_Inventorship_in_Inventions_involving_AI_Activity_en.pdf

¹³ See Grounds of the EPO decision of 27 January 2020 on EP 18275163 and EP 18275174, in European Patent Office. (2020, January). EPO publishes grounds for its decision to refuse two patent applications naming a machine as inventor/ <https://www.epo.org/en/news-events/news/epo-publishes-grounds-its-decision-refuse-two-patent-applications-naming-machine>

not a machine.¹⁴ In addition, machines can't be employed, nor can they exercise rights, as they lack legal status.

While the EPC doesn't define the concept of "inventor", it is left to national legislations to determine inventorship. Looking at various jurisdictions worldwide, the general criterion used in national patent laws is that an inventor should contribute substantially to the intelligent and creative conception of the invention. The focus is on the result — that is, the idea or plan, not the process in a human's mind. Hence, where a human makes a substantial contribution to the conception of an invention, even if the technical solution may have been found by applying an AI system, the human qualifies as the inventor.

The situation may become even more complicated in the future when automation of problem-solving through machines reaches a degree that would no longer fit the concept of human inventorship (Kim, 2020, 448). For example, this could be the case when computers are able to deviate from the algorithm provided by a human or relate inputs and outputs without instructions from a human. Then, the question arises as to whether it is desirable to allow an AI system to be named as an inventor or whether patents should be granted without mentioning an inventor in cases where a machine created it.

In our opinion, regardless of which option is pursued, it is entirely doubtful whether patent law should stimulate innovation with respect to AI-generated inventions.

Most copyright theories are based on the assumption that ideas must come from the human mind. Our research allows us to conclude that the source of creativity is a person. That is why intellectual property legislative systems in most countries assume that the author of a work is a person (Clifford, 1997, 1685).

In the **Football Dataco** case, the ECJ stated that copyright does not exist where a work is dictated by technical considerations, rules, or restrictions, while noting that the results of artificial intelligence still depend on technical rules and human programming.¹⁵ In the **Bleistein V. Donaldson Lithography Co.** case, the US Supreme Court drew a clear distinction between human work and "something artificial".¹⁶ The Court clearly expressed its position using the following concept: "something irreducible, which is one man's alone," which means that there is no place for what isn't the result of human creativity. In addition, the summary of practice of the US Department of Copyright states that the department registers only original works created by a person (a human being).¹⁷ The creator of the analytical engine program (a prototype of the modern computer), Ada Lovelace, found that "the machine can do (only) whatever we know how to order it to perform" (Bridy, 2012, 9).

In addition, referring to the legal experience of developed countries, we note that the Copyright, Designs and Patents Act of the United Kingdom (CDPA) stipulates that: "In the case of a literary, dramatic, musical, or artistic work created with the help of a computer, the author is considered to be the person who carries out the necessary activities for the creation of the work".¹⁸

Thus, a study of statutes, case law and conclusions of outstanding scientists and scholars allows us to reasonably establish that, in order to obtain copyright protection, a work must be

¹⁴ Convention on the Grant of European Patents (Eur. Patent Convention) art. 60, Oct. 5, 1977 4 OJ EPO 2001 55. (as revised by the Act revising Article 63 EPC of 17 December 1991 and the Act revising the EPC of 29 November 2000).

¹⁵ Case C-604/10, *Football Dataco Ltd. v. Yahoo! UK Ltd.*, 2011 EUR-Lex CELEX LEXIS 62010 (March. 1, 2012).

¹⁶ *BLEISTEIN V. DONALDSON LITHOGRAPHING CO.*, 188 U.S. 239 (1903).

¹⁷ U.S. COPYRIGHT OFFICE, *COMPENDIUM OF U.S. COPYRIGHT OFFICE PRACTICES* § 101, at 4 (3d ed. 2017).

¹⁸ The Copyright, Designs and Patents Act 1988, c. 1, § 9(3) (UK).

the result of the creative activity of the author. That is, the author personally makes a certain creative contribution to its creation, regardless of how modest or small this creativity may be (Samuelson, 1986, 1204).

It should also be noted that, according to the current legislation of the Republic of Armenia, only a natural person can qualify as the author of a work. Unfortunately, at present, there have been no judicial rulings by the Armenian courts on the above issue, so we can only be dictated by legislative regulation based on a literal interpretation of the legislative provision.

Public Domain Regime for AI-Generated Content

In the scope of examining the legal possibility of granting public domain status to AI-generated works, it seems remarkable to examine the **Naruto v. David Slater** case, considered by the 9th Circuit Court of the United States. The case questions the scale to which the essential concepts of authorship can be changed under copyright law. In 2011, British photographer David Slater issued a license for several photos taken in an Indonesian nature reserve from a very close distance (the so-called “monkey selfie”) to be published in the British media. A few days later, the editor of Wikimedia Commons uploaded these photos, claiming that they had been created by an animal, so they do not have an author and copyright protection cannot be extended to them. The photos were instantly distributed on an online platform, leaving the photographer with no payment. In 2015, the People for the Ethical Treatment of Animals organization filed a lawsuit against Slater and the publisher of the book containing the photos subject to dispute on behalf of a macaque named Naruto, demanding that the monkey be recognized as the copyright owner. In 2016, the court of first instance dismissed the claim on the grounds that, even if Naruto had created the photo in an “independent, autonomous operation”, the claim could not be satisfied because animals do not have legal status in court, and therefore cannot sue for copyright infringement.¹⁹

American and British intellectual property lawyer Mary M. Lurian argued that, since the creator of the photo was an animal and not a person, copyright is basically out of the question, regardless of who owns the equipment with which the photo was created.²⁰

Programmer as an Author of Machine-Generated Works

It is worth noting that, based on the principle of derivative works, programmers cannot claim copyright either.

Programmers cannot know what artificial intelligence will create, since it is the user who determines the shape of the final result. In addition, despite the fact that programmers invest work and other resources into the creation of artificial intelligence, it is unknown to what extent these investments will eventually be reflected (Jaszi, 2009, 108).

Programmers create the possibility of creation, but not creativity itself. It is similar to the difference between a creator and the user of a tool. If we consider artificial intelligence to be a tool controlled by a user, then this program can be compared to a word processing program or a camera. It is unlikely that the programmer of a word processing program or the manufacturer of a camera could claim copyright for works created using these tools.

¹⁹ NARUTO V. SLATER, 888 F.3d 418 (9th Cir. 2018).

²⁰ Laurent, O. (2014, August 6). *Monkey selfie lands photographer in legal quagmire*. Time. <https://time.com/3393645/monkey-selfie-lands-photographer-in-legal-quagmire/>

Finally, the concept of interpreting a programmer as an author would expand the author's concept of preserving intellectual creativity, which would mean a significant expansion of copyright (Jaszi, 2009, 107).

If AI is considered to be a separate entity, distinct from its creator or owner, it cannot be held responsible for infringements under the CDPA. This lends support to adopting the school of thought that, with respect to liability in cases of data infringement, AI is an extension of the creator. This also ensures that consideration is paid to the owners of a copyright for the right to use their work and, in turn, incentivize people to create more AI works. Otherwise, substantial commercial issues would surface as to who should be the recipient of royalties, if anyone.

Thus, the question arises: who would be the owner of the copyright – the human or the AI system designed by them? Principally, AI is a creation of its programmer's mind, since it is a human that develops the AI's algorithms. Despite the massive developments in AI, some element of human intervention (however, negligible) is still required at this stage, even if only to put AI into action. The arrangement and selection of data input, trigger conditions, and template style in AI is still done by a human programmer. It is also true that, due to machine learning and deep learning capabilities, in the future, AI may form new, autonomously generated algorithms, in addition to the algorithms previously set by humans, and the products obtained from the artificially formed algorithm could be wholly AI generated works.

It should be noted that the recognition of copyright in relation to the developer of the program emphasizes the basic idea of intellectual property law – that such a decision will be an incentive for further improvement of artificial intelligence systems, as well as increase the number of works created through artificial intelligence. At the same time, assigning copyright to a programmer is not without some practical issues. Having developed and implemented an AI machine, a programmer, does not know what artificial intelligence is capable of creating. AI determines the shape of the final result. In addition, although the programmer invests labor and other resources into the creation of AI, the extent to which these investments will be contained in the final result is unknown.

If we consider artificial intelligence to be a tool controlled by the user, then this program can be compared to a word processing program or a camera. It is very unlikely that anyone would argue that the programmer of a word processing program or the manufacturer of a camera should be granted copyright to works created using these tools.

Creating artificial intelligence requires significant investment, and therefore the programmer should be rewarded for creating the device. Motivation is perhaps the most obvious argument in favor of a programmer's claim to copyright.

In our opinion, the concept of recognizing a programmer as the owner of rights to works generated by AI seems to be acceptable in a certain sense and would not require significant changes to current legislation or intellectual property rights, the core of which is still a person.

As a result of studying the foreign experience in legal regulation, as well as the opinions of prominent scholars in the field of intellectual property law, we can conclude the following: if current legislation recognizes only a human creator as the author of a work, then, by virtue of the law, a programmer who develops artificial intelligence systems can be considered the author of works generated by artificial intelligence.

International Legislative Approaches in the Field of Artificial Intelligence

On March 2, 2022, the European Union Intellectual Property Office (EUIPO) released a “Study on the Impact of Artificial Intelligence on the Infringement and Enforcement of Copyright and Designs”.

The authors of the study believe that emerging technologies such as AI and machine learning represent a “double-edged sword” that can be effectively used to enforce, as well as to infringe upon, IP rights.²¹

In July of 2022, the UK government published an AI Action Plan, summarizing its intent to introduce a “pro-innovation approach to regulating AI”.²² The UK government’s proposals enable regulators to take a case-by-case approach to the use of AI in a range of settings. The goal is to ensure that the UK’s AI regulations keep pace with change and avoid serving as an obstacle to innovation.

On March 29, 2023, the UK government released an AI White Paper entitled “A pro-innovation approach to AI regulation”, which sets out plans for the future regulation of AI in the United Kingdom.²³ In the White Paper, the government proposes retaining the existing sector-by-sector approach to AI regulation in the United Kingdom, while introducing a cross-sector framework of five overarching principles — namely:

- safety, security, and robustness;
- appropriate transparency and explainability;
- fairness;
- accountability and governance;
- contestability and redress.

These five principles have not yet been introduced in statutes, but the government intends to put sector regulators under a statutory duty to give due regard to these principles and apply them to AI within their remits when exercising their functions.

A number of regulations regarding automated decision making that involve the use of data, machines, and algorithms have recently been put into place across the US. For example, the Illinois Artificial Intelligence Video Interview Act requires employers to obtain consent when they use AI to vet video job interviews.²⁴

On June 16, 2022, the Canadian government tabled Bill C-27, The Digital Charter Implementation Act, 2022.²⁵ Bill C-27 proposes that, among other things, the Artificial Intelligence and Data Act be enacted. This is the country’s first attempt to regulate AI systems outside of privacy law and would result in criminal and/or financial repercussions for businesses that are found to engage in unlawful or fraudulent behavior related to AI.

The use of AI systems has an important impact on the IP system. AI tools are not only used to facilitate the search, examination, administration, and enforcement of IP rights. More importantly, AI tools and the works generated by them can be protected by copyright or patents. Such protection can stimulate their further development, but also limit their enjoyment and dissemination. The effects

²¹ European Union Intellectual Property Office. (2022). *Study on the impact of Artificial Intelligence on the infringement and enforcement of copyright and designs*. <https://data.europa.eu/doi/10.2814/062663>

²² Secretary of State for Digital, Culture, Media and Sport. (2022, July 20). *Establishing a pro-innovation approach to regulating AI* [White Paper]. Government of the United Kingdom. <https://www.gov.uk/government/publications/establishing-a-pro-innovation-approach-to-regulating-ai/establishing-a-pro-innovation-approach-to-regulating-ai-policy-statement>

²³ Secretary of State for Science, Innovation and Technology. (2023). *A pro-innovation approach to AI regulation* [White Paper]. Government of the United Kingdom. <https://www.gov.uk/government/publications/ai-regulation-a-pro-innovation-approach/white-paper>

²⁴ Artificial Intelligence Video Interview Act, 820 ILCS 42 (2020).

²⁵ Act to enact the Consumer Privacy Protection Act, the Personal Information and Data Protection Tribunal Act and the Artificial Intelligence and Data Act and to make consequential and related amendments to other Acts, C-27 (2021). See Parliament of Canada. (2021, November 22). *Digital Charter Implementation Act, 2022*. <https://www.parl.ca/LegisInfo/en/bill/44-1/c-27>

of IP protection for general purpose AI technology needs to be carefully considered in light of the costs and benefits it imposes on society.

Conclusion

This paper has analyzed to what extent patent and copyright protection is currently available for AI technologies, as well as for AI-assisted and future AI-generated works, in particular under the law of Armenia, the EU and U.S. law. Regarding copyright protection, the protection of AI systems as computer programs does not pose challenges to the current copyright framework. The challenges lie more in the protection of AI-assisted and AI-generated creative output, as it fundamentally challenges the anthropocentric copyright regime, where the author as a human plays a pivotal role. Without a human being making sufficient free, personal, and creative choices in generating a work, works cannot be protected under copyright. They will become part of the public domain. Further research into the potentially harmful effects of leaving such works unprotected must be conducted in order to show whether another regime affording protection may be needed.

As the law stands, patent protection would mainly depend on an assessment of whether a skilled person would routinely use AI tools to design new products and processes and whether, in that light, the use of an AI tool to arrive at the particular technical features of the invention was obvious. This determination is complex and will vary with the further development of AI research. IP law will have to adapt to these new challenges. Effectively addressing IP issues requires a collective effort from all stakeholders, including policy makers, service providers, developers, content creators, and business owners.

Given the mix of human and AI authorship in artificial intelligence generated content, it is difficult to identify where human authorship ends and where AI authorship begins for the purposes of copyright protection. The law has not yet provided clear guidance on the threshold required to be met by either humans or AI in order to be deemed to have contributed sufficiently to a work to be regarded as its author. As AI becomes more advanced, it may also begin to generate works without human intervention. At that point, the law may need to recognize AI software as capable of owning IP rights.

It is also important for businesses to give their employees basic training on how to use new AI tools without violating their privacy and trade secrets. In a recent incident, Samsung employees accidentally leaked secret company data (trade secrets) by including a source code in its prompt. As Chat GPT retains the data for training purposes, these trade secrets from Samsung are now in the hands of Open AI.

While we embrace these innovations, it is important to learn how to use them responsibly in order to safeguard sensitive data, as well as to recognize the rights of those who have contributed to the creation of AI, as they may be impacted by its use. As AI is becoming increasingly integrated into our lives, it is crucial to find a balance between its development and adoption, and IP rights.

References

1. Alekseev, A.Yu. (2013). Problema tvorchestva v issledovanii iskusstvennogo intellekta [The problem of creativity in construction of artificial intelligence]. In E.N. Knyazeva (Ed.), *Epistemiologia kreativnosti [Epistemology of creativity]* (pp. 374–414). Canon + & ROOI “Rehabilitation”.
2. Bridy, A. (2012). Coding creativity: Copyright and the artificially intelligent author. *Stanford Technology Law Review*, 5, 1–28.

3. Clifford, R. D. (1997). Intellectual property in the era of the creative computer program. *Tulane Law Review*, 71, 1675–1703.
4. Jaszi, P. (2009). Is there such a thing as postmodern copyright? *Tulane Journal of Technology and Intellectual Property*, 12, 105–121.
5. Kim, D. (2020). AI-generated inventions: Time to get the record straight? *GRUR International*, 5(69), 443–456. <https://doi.org/10.1093/grurint/ikaa061>
6. Ramalho, A.Q.R.N. (2019). Originality redux: An analysis of the originality requirement in AI-generated works. *AIDA*, 2–18.
7. Samuelson, P. (1986). Allocating ownership rights in computer-generated works. *University of Pittsburgh Law Review*, 47, 1185–1228.
8. Vertinsky, L. (2017). Thinking machines and patent law. In W. Barfield, & U. Pagallo *Research handbook on the law of artificial intelligence* (pp. 489–510). Edward Elgar Publishing.

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