The Practices of Advanced Countries in the Legal Regulation of Intellectual Property Objects Created by Artificial Intelligence

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Abstract

[Purpose] The purpose of this study is to outline the general features of legal regulation in advanced countries of artificial intelligence in the field of intellectual property law, namely in the context of legal regulation of intellectual property rights created by such artificial intelligence.

[Methodology/Approach/Design] During the conducted research, the leading method is the comparative legal method. However, apart from it, an array of philosophical, general scientific, and special scientific methods has been used.

[Findings] The main results obtained are the analysis of the provisions of regulations governing the specific features of intellectual property rights created by artificial intelligence in advanced countries of the world, such as the United States of America, Great Britain (England, Scotland, Wales, Ireland), the countries of the European Union, etc.

[Practical Implications] Practical recommendations are provided for improving the national (Kazakh) legislation in the context of legal regulation of this issue.

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[Originality/Value] The materials can be used for further scientific research of the statutory regulation of intellectual property objects created by artificial intelligence and constitute a practical value for improving the quality of the available regulators.

Keywords: Statutory Regulation. Objects of Intellectual Property Rights. Intellectual Property Law. Judicial Practice.

INTRODUCTION

Today, no one doubts the intensity of the development of artificial intelligence technologies. Currently, it is quite relevant to investigate the role of artificial intelligence technologies in the context of intellectual property in connection with the following. According to statistics (ABADI & PECH, 2020), the largest number of patents related to artificial intelligence since 2008 has been issued in countries such as the United States of America, Korea, Japan, Germany, China, and Israel. In all these countries, there is a tendency to increase the number and share of patents related to artificial intelligence. The United States of America registered the largest number of patents related to artificial intelligence during this period, although Israel had the highest proportion of patents related to artificial intelligence compared to other patents. In 2018, about 13% of Israel's patents were related to artificial intelligence. Japan and Germany were the second and third-ranked countries in terms of the number of patents related to artificial intelligence at the beginning of this period, but later they were overtaken by Korea and ranked second after the United States of America.

Evidently, patents, as well as copyright (which is not subject to mandatory registration, and therefore there are no statistics on the involvement of artificial intelligence in the creation of such works), belong to the sphere of intellectual property law regulation. However, the biggest problem in this case is the incomplete settlement of issues related to the creation of intellectual property objects by artificial intelligence or the complete absence of such a specific settlement within individual states (for example, Kazakhstan).

The object of this study is regulations governing these relations, adopted by state foreign legislative bodies, as well as regulations related to the governance of intellectual property objects created by artificial intelligence. This subject is relevant and has both theoretical and practical significance for the investigation of trends in the legal regulation of intellectual property objects created by artificial intelligence because legal relations concerning such new technologies exist in practice but lack specific statutory regulation. Previous studies in this area by such foreign authors as M. Miernicki and Y. Huang (2021), P. Torremans (2011),

A. Brown et al. (2019), W. Knight (2017) cover various separate aspects of the legal regulation of the issue that is the subject under study (for example, on the intangible rights of artificial intelligence, the concept of the author's place in the system of subjects of intellectual property law, ethical aspects of the formation of artificial intelligence as the author of intellectual property objects) in each individual country. However, despite the multitude of scientific papers on this subject, there is no single generalised study that would highlight the main trends in the development of legal regulation of intellectual property objects created by artificial intelligence in the advanced countries of the world. There is still no consensus in the doctrine of intellectual property law on who exactly is the author of intellectual property objects created by artificial intelligence, what should be the legal status of artificial intelligence, who should be responsible for the actions of artificial intelligence, etc. (SYLKINA, 2020). In addition, due to the rapid development of artificial intelligence technologies, any research conducted even a little earlier on this subject tends to become outdated quickly, so a new, more detailed analysis of this issue is necessary.

Thus, the purpose of this study is to establish the specific features of the legal regulation of intellectual property objects created with artificial intelligence implemented by advanced countries of the world, to determine the trends in the development of such legal regulation and the necessity and expediency of its implementation in the national Kazakh legislation.

MATERIALS AND METHODS

This study was carried out based on two sets of sources: the first is the theoretical framework, which comprises previous scientific research on this subject carried out by representatives of the science of intellectual law of advanced countries; the second is the regulatory framework, which includes a group of available foreign and international legal acts governing intellectual property, created by artificial intelligence. Proceeding from the above arrays of sources, the entire process of authoring this paper can be divided into several stages. The first stage includes a selection of the relevant theoretical and regulatory framework for the subject under study, which contain scientific articles, monographs, dissertations, and other scientific papers, specialised books mainly by foreign researchers on the raised issue, such as foreign scientific research, foreign regulations, and international acts concerning the legal regulation of intellectual property objects created by artificial intelligence. This framework has become the basis for conducting theoretical scientific research. Separately, a selection of foreign regulations was carried out that govern legal

relations concerning the intellectual property objects created by artificial intelligence to analyse them in detail and detect general trends in the legal settlement of this issue.

The second stage involves the direct study and analysis of the above sources. As a result of this stage, the authors of this paper developed their scientific conclusions, which will be described later in this article. In addition, proposals and recommendations were developed based on the conclusions made to improve the statutory regulation of intellectual property objects created by artificial intelligence. The third stage of this study includes summary of the results and their final formalisation within the framework of this paper. The obtained results can be used by scientists in the future upon considering the issues of legal regulation of intellectual property objects created by artificial intelligence, as well as when conducting such regulation at the national level. In this study, within its specified stages, a complex of philosophical, general scientific and special scientific research methods was used.

Of the philosophical methods, the dialectical method has found its application, which allowed establishing the essence of the main terms and concepts used (for example, the concepts of intellectual property, intellectual property rights, artificial intelligence, etc.). The general scientific method of analysis was also used in the analysis of the above definitions of intellectual property, intellectual property rights, artificial intelligence, etc. In addition, this general scientific method was used upon analysing individual foreign regulations of a particular country or international legal acts governing intellectual property objects created by artificial intelligence. As a result of such an analysis, by applying the synthesis (unification) method, general trends in the legal regulation of social relations are derived, which constitute the subject under study. The modelling method was employed upon making recommendations based on the identified general trends towards legal regulation or improvement of the available national (Kazakh) legislation in the field of intellectual property objects created by artificial intelligence.

Of the special scientific research methods, the Aristotelian method becomes essential for the cognition of the main terms, concepts, and categories under study. But the main method of scientific research used in authoring this paper is the comparative legal method, since it is by comparing the provisions of foreign regulations of a particular country or international legal acts governing intellectual property objects created by artificial intelligence that the author has the opportunity to identify general trends in such legal regulation.

RESULTS

During the author's research on the subject under study (the practices of advanced countries in the legal regulation of intellectual property objects created by artificial intelligence), carried out according to the above methodology, the following results were achieved. Initially, during this study, the author established the essence of the key terms "intellectual property" and "artificial intelligence". The concept of intellectual property is regulated in almost all national laws of every developed country in the world. However, attention should be paid to the international legal regulation of this definition. According to Article 2.8 of the Convention establishing the World Intellectual Property Organisation (1967), intellectual property includes the rights to:

1. Literary, artistic, and scientific works, performing activities of artists, sound recordings, radio, and television broadcasts (copyright and related rights);

inventions in all fields of human activity, scientific discoveries, industrial designs (patent law);

2. Trademarks, service marks, trade names and commercial designations (means of individualisation of participants in economic activity);

3. Protection against unfair competition, as well as all other rights related to intellectual activity in the industrial, scientific, literary, and artistic fields.

In foreign literature, intellectual property refers specifically to intellectual property rights, which, firstly, are proprietary rights; secondly, these proprietary rights arise regarding intangible objects; thirdly, these rights protect inventions and other creations and reward inventive and creative activity (TORREMANS, 2011). Accordingly, the branch of law that governs social relations regarding these intellectual property objects is called intellectual property law. Intellectual property law in almost all countries of the world includes such institutions as copyright and related rights, patent law, rights to objects of identification of participants in economic activity and rights to non-standard intellectual property objects (POPOVA et al., 2021). However, each country has its specific features. For example, the structure of intellectual property law in the United States of America includes patent law, copyright, registered and unregistered industrial designs and trademarks (BROWN et al., 2019).

As for artificial intelligence, modern scientists interpret it as the use of computer technologies and algorithms to perform logical tasks or research using a method associated with the activity of the human brain (LEE et al., 2021). In the modern world, the development of artificial intelligence has reached a level at which the latter can create individual objects of intellectual property. For example, according to the World Intellectual Property Organisation, as of 2021, since the inception of the term "artificial intelligence" in 1956, patent applications for 340 thousand inventions in this field have been filed in the world, and the most

common applications in the field of artificial intelligence are computer vision processing technologies, including facial recognition systems, human speech recognition systems, technologies in the field of creating robots and developing methods of controlling them (PRYLYPKO, 2021).

The general features of the European legal regulation of activities related to artificial intelligence are reflected in the recently published White Paper on Artificial Intelligence (2020). It focuses on the fact that although artificial intelligence can bring many benefits, including making products and processes safer, it can also cause harm. This harm can be both material (safety and health of people, including loss of life, material damage) and non-material (loss of the right to privacy, restriction of the right to freedom of expression, human dignity, discrimination). The regulatory framework is obliged to focus on how to minimise various dangers of potential harm, especially the more significant ones. The main dangers associated with artificial intelligence relate to the implementation of rules designed to protect fundamental rights, as well as issues related to security and responsibility (RAZMETAEVA & RAZMETAEV, 2021).

The first important recommendation that should be drawn from the practices of legal regulation of intellectual property objects created by artificial intelligence in the United States of America is to establish the identity of the author in this situation. In post-Soviet countries have a legal position according to which the author of works in the field of copyright is an individual. In particular, such a definition is consolidated both in national legislation (Article 2.1.1 of the Law of the Republic of Kazakhstan No. 6-I "On Copyright and Related Rights" (2020) and in the legislation of other post-Soviet countries (Law of Ukraine No. 3792-XII…, 2022). The problem is that artificial intelligence is not an individual because it is a set of algorithms, a certain computer programme. In this case, it is advisable to consider the practices of foreign researchers on this issue.

There are several positions in the doctrine of American law regarding the solution of such a problem. Some authors (KNIGHT, 2017) consider the possibility of recognising artificial intelligence directly as the author of the intellectual property object created by it. This concept is based on the fact that artificial intelligence is not just an automatic system, it can also be an autonomous system. Other American scientists (MIERNICKI & HUANG, 2021) propose the following concept of solving such a problem – the author of a work created by artificial intelligence should be considered the person who created such artificial intelligence or is its owner or legitimate user. Notably, at the legislative level in the United States of America, artificial intelligence is not recognised as a subject of copyright at the moment. The author of this paper is inclined to the second opinion because artificial intelligence cannot independently protect its creations,

for example by filing a lawsuit in court. Such an action can only be performed by an individual (or a legal entity on their behalf) who has a financial interest.

Proceeding from the above, the author proposes to state Article 2.1.1 of the Law of the Republic of Kazakhstan "On Copyright and Related Rights" (2020) in the following wording: "the author is an individual whose creative work resulted in a work of science, literature, art, or which is the developer and/or owner, legal user of artificial intelligence that created such an object." The specific feature of using the "and/or" construction in this definition will be described in more detail in the next section of this paper.

The issues of intellectual property objects created by artificial intelligence in the United Kingdom are somewhat settled. There is a legal regulation of certain aspects relating to such specific legal relations. First, attention should be paid to Section 9.3 of the Copyright, Industrial Designs and Patents Act of 1988 in force in the UK (1988), according to which "In the case of creating a literary, dramatic, musical or artistic work using a computer, the author is considered to be a person who has taken the measures necessary to create works". The definition of a work created by a computer is further contained in Section 178 of the aforementioned Act (Copyright, designs and…, 1988): "a work created by a computer" in relation to a work means that the latter was created using a computer under such circumstances that the author of the work is not a person. Thus, a work created by artificial intelligence also falls under this definition.

Notably, there is already a judicial practice on the recognition of copyrights to intellectual property objects created by artificial intelligence in foreign countries. In particular, this refers to the decision made in 2018 by the Shenzhen District People's Court of Nanshan in the case of copyright infringement on an article written by a Dreamwriter robot owned by the technology giant Tencent Technology (Beijing) Co., Ltd. Tencent Technology (Beijing) Co., Ltd. has independently developed a set of intelligent auxiliary writing systems based on data and algorithms called Dreamwriter to meet the needs of large and personalised content companies. In this case, Beijing Tencent granted the plaintiff Shenzhen Tencent a license for Dreamwriter software. On August 20, 2018, Shenzhen Tencent first published an article about financial statements on the Tencent Securities website and noted at the end that: "This article was automatically written by the Tencent Dreamwriter robot." The defendant in this case, without the permission of Tencent, reprinted the article on their website on the day of its publication. The plaintiff, Shenzhen Tencent, filed a lawsuit against Shanghai Yingxun on the grounds of copyright infringement and unfair competition. The court found that this article meets the criteria for protection established by the copyright of the People's Republic of China. The

court ruled a violation of the right to publish in the actions of the defendant, who copied the article on their website without permission (ZHOU, 2020). Despite the existence of such judicial practice in the People's Republic of China, the opposite approach is generally dominant in world judicial practice, i.e., the approach indicated in the court decision is more an exception to the rule.

In the context of legal protection of industrial property objects, there is a practice wherein the European Patent Office and the Intellectual Property Office of the United Kingdom recognised an invention autonomously generated by artificial intelligence that meets the conditions for granting legal protection within the scope of verification for publication of the application. Moreover, it was artificial intelligence that was specified by the inventor in the applications (ZHOU, 2020).

As for the legal regulation of the issues that comprise the subject of this article in Germany, on November 14, 2018, the federal Government adopted a Strategy for the development of Artificial Intelligence (ANDROSCHUK, 2019). Notably, this Strategy, as well as other German regulations, constitutes a general document and does not contain any legal norms that would directly govern relations concerning intellectual property objects created by artificial intelligence. It only indicates the intention to allocate a certain part of the financial resources from the German State Treasury for the development of artificial intelligence technologies. However, in practice, certain legal postulates in this regard were developed by the German courts. In particular, the Decision of the German Federal Patent Court No. 11 W (pat) 5/21 of November 11, 2021 (SCHULZE, 2021) states that inventions created by artificial intelligence are not excluded from patent protection. Thus, it is possible to indicate artificial intelligence as an inventor in the field of intellectual property, but only if a particular person is indicated as its inventor. That is, artificial intelligence can be an additional inventor of intellectual property objects in Germany.

DISCUSSION

As already mentioned above, foreign scientific research of experts in the field of intellectual property law contains many legal opinions regarding the possibility of granting artificial intelligence the status of the author of intellectual property objects that they created. In continuation of the above study, this discussion should be covered in more detail.

The doctrine of American law has several positions on the solution of such an issue. Some authors (KNIGHT, 2017) consider the possibility of recognising artificial intelligence directly as the author of the intellectual property object

created by it. This concept is based on the fact that artificial intelligence is not just an automatic system, it can also be an autonomous system. Recent advances in artificial intelligence technology have allowed one artificial intelligence to learn from other artificial intelligences in a process called "kickstarting". This follows from the fact that the developers of artificial intelligence cannot explain why their programmes gave a certain result, but not the one that was planned to be achieved. Based on this, conclusions are drawn regarding the ability of artificial intelligence to have its personality and the ability to make decisions.

Thus, the author of this paper would like to pay more attention to the kickstarting system, which underlies the position concerning the autonomy of artificial intelligence from the person who created it. In this regard, American researchers (SCHMITT et al., 2018) point out that the possibility of learning from teachers is a distinctive feature of human development, but in recent studies of artificial intelligence it turned out that artificial intelligence as an agent can effectively learn from other agents (also artificial intelligences), using them as teachers. The purpose of the novel approach – kickstarting – is to quickly train new student agents in the presence of previously trained teacher agents. As a result of complex mathematical calculations and practical experiments using this method, scientists concluded that by kickstarting with one teacher, it is possible to achieve a 1.5-fold acceleration compared to training a modern agent from scratch and a student agent can quickly surpass their teacher. In addition, following the results of the experiment, it turned out that with the involvement of several agent teachers specialising in particular tasks, it is possible to achieve even more considerable success: an agent trained using kickstarting technology corresponds to the performance of an agent trained from scratch and exceeds its final performance by 42.2%. Therewith, upon using kickstarting, 9.58 times fewer steps are required than upon teaching an artificial intelligence student from scratch. Using such knowledge, foreign researchers in the field of intellectual property argue that if artificial intelligence has mastered the inherent ability of a person to learn from a teacher (in this case, another artificial intelligence), then it is something more than just a set of computer algorithms and is autonomous from its creator, i.e., it can be a subject of copyright and have the rights to the unique object created by it (PETRYSHYN & HYLIAKA, 2021).

According to the author, such conclusions are premature. Admittedly, research in the field of the possibility of artificial intelligence to implement certain functions inherent only in humans considerably strengthens the approach to recognising artificial intelligence as the author of the works it created. However, in this case, this issue should be considered not only from the standpoint of the latest computer research, but also from the standpoint of law, namely in the

context of a regulatory approach. Notably, the regulatory consolidation of artificial intelligence as the author of intellectual property objects requires not only a scientific justification of this approach, but also the definition of the best model of such legal regulation. Questions about how artificial intelligence will exercise its rights and perform its duties remain open. And the key question is who will be responsible for violating the rights of others. The concept of legal personality also includes delinquency, i.e., the ability to bear responsibility for their actions. It is possible to solve the problems raised above as a result of long scientific research in this area.

Other American scientists (MIERNICKI & HUANG, 2021) propose the following concept of solving a problem of the subject-author of a work created by artificial intelligence – such a subject should be the person who created such artificial intelligence or is its owner or legitimate user. In the same context, in the American scientific doctrine, there is also the concept that artificial intelligence, upon creating an object of copyright is a worker, a contractor, while the customer is the person who created artificial intelligence (DICKENSON et al., 2017). Thus, the creation resulting from the work of artificial intelligence is proposed to be considered a work made for hire.

Evidently, the most popular and scientifically sound are the following three positions:

(1) The author should be considered the developer of artificial intelligence (computer programme or code);
(2) The author should be considered an artificial intelligence user (e.g., when using Photoshop);
(3) The author is directly artificial intelligence (the concept of an electronic person) (TYMOSHENKO, 2020).

If the main developments of American scientists have already been outlined regarding the third concept, then now it is worth paying attention to the most common positions in the world presently – that the author is an artificial intelligence developer or its user. Considering them separately, the problem arises that the degree of involvement of another person in the creation of an intellectual property object is not fully considered. In particular, such a problem does not arise only if the developer of artificial intelligence is at the same time its owner or legitimate user. Otherwise, when these are two separate persons, it should be indicated that they are both partially involved in the creation of the intellectual property object because the object itself is created due to the fact that a certain person created such artificial intelligence. On the other hand, the intellectual property object is created using and based on files and data uploaded by another person, the direct user of such artificial intelligence, at the time of its creation.

However, none of them can be separately considered the author of the work created by artificial intelligence because the creative and intellectual activity of a person is a computer code that constitutes the basis of artificial intelligence (the developer's side), and the work generated by the programme does not contain the influence of the developer, since it performs a certain algorithm of actions. The user of artificial intelligence is not the author of the object of intellectual property to the full extent because they only upload certain files to the programme, while the artificial intelligence itself (the user's side) performs creative activity (TATSYI et al., 2010).

Thus, according to the author of this study, it would be advisable to combine these concepts and grant the author's rights equally to both the developer of artificial intelligence and its owner (such intelligence can also be an object of civil turnover) or to a legitimate user using artificial intelligence upon creating it. This opinion stipulates the author's proposal to amend the national (Kazakh) legislation and the use of the "and/or" construction in the proposed definition.

Notably, the consideration of a person, and not artificial intelligence as the author of an intellectual property object, may be conditioned upon one of the three theories that modern researchers (HUGHES, 2018) pay attention to in this area of legal science: labour theory; personality theory; remuneration theory.

Labour theory assumes that people have the right to own property rights based on the labour they have invested in obtaining the relevant item, i.e., they have the right to earn "the fruits of their labour." According to personality theory, creating something and making it available to the public is an expression of personality that is supposed to rely on human interaction with external objects. According to the remuneration theory, it is fair to reward someone for enriching society (by recognising them as an author (or by registering a patent, in our case). All these theories justify why a person as an individual should be considered the author of intellectual property objects created by artificial intelligence.

Consideration of the problem of legal regulation of intellectual property objects created by artificial intelligence also lies in the field of the possibility of regulatory endowment of its status as a subject of law (intellectual property in this case). Notably, for artificial intelligence to exercise its rights and obligations, it must have a certain status or legal regime. However, the attribution of artificial intelligence to one of the currently available categories of subjects of intellectual property rights appears to be impossible for the following reasons.

In particular, the legal status of artificial intelligence cannot be created based on the legal status of a person (an individual) because this will be accompanied by the endowment of artificial intelligence with certain non-property rights, such as the right to respect for honour and dignity, the right to

personal inviolability, which in their content can belong only to an individual. Most researchers support this opinion, justifying it by the fact that non-property rights are closely related to the creations of people, and their application to artificial intelligence will represent an extension of the grounds of non-property rights, and therefore, will require additional justification (MIERNICKI & NG, 2019; GETMAN & KARASIUK, 2014). The author of this paper fully supports this opinion. Although there is still a discussion on this issue. For example, some American researchers (HOLDER et al., 2016; MCCORMACK et al., 2019) directly link the possibility of artificial intelligence to have non-property rights with its ability to be creative as a person. They point out that it is fair to assume that artificial intelligence has the potential to create works that would be indistinguishable from human creations and therefore can own non-property rights. Although, the author of this paper deems this opinion very controversial.

On the other hand, the legal status of artificial intelligence cannot be considered based on the legal status of a legal entity because a legal entity is a legal fiction, its representation is still carried out through separate individuals managing it. However, artificial intelligence is not controlled by individuals on its behalf, and it is not a legal fiction, it exists in a computer (electronic) space. Thus, it should be concluded that the recognition of artificial intelligence as the author of intellectual property objects created by it is possible only after the development of an optimal model of its legal status, which should be separately created and have an intermediate nature between the legal status of an individual and a legal entity, considering its specific features. And even in this case, there are considerable drawbacks to the implementation of this position in terms of the regulatory field indicated by the author in this paper (for example, the inability of artificial intelligence to independently defend its rights in court).

Consequently, based on all the research conducted by the author of this study and the available research on the issue that is the subject under study, the conclusion emerges that the legal regulation of relations concerning intellectual property objects created by artificial intelligence is only at the creation stage; scientific research plays an important role in this regard. Even in advanced countries, the practices of legal regulation are insufficient to state that they have introduced a systematic settlement of this issue. Currently, there is no legal regulation of the issue of intellectual property rights to objects created by artificial intelligence in the Kazakh legislation. To systematically consider all the trends indicated in the paper in the development of legal regulation of intellectual property objects created by artificial intelligence, it is necessary to summarise the research results obtained.

CONCLUSIONS

Proceeding from the results of the research conducted on the legal regulation of intellectual property objects created by artificial intelligence, there is a need to summarise the findings. There is no legal regulation of intellectual property objects created by artificial intelligence in the national Kazakh legislation. In advanced countries, scientific research is actively conducted in this area, but legal regulation is at the nascent level. There is no regulation in any country that fully governs the scope of rights to objects created by artificial intelligence. The general principles of European legal regulation are defined in the White Paper on Artificial Intelligence, which defines it as a potential threat and indicates that legal regulation should minimise the potential risks of using artificial intelligence.

The most developed in the aspect of legal regulation of intellectual property objects created by artificial intelligence is the legislation of the United Kingdom, which contains the definition of computer-created works and defines their author. Considering these practices, the author of this paper proposes to amend Article 2.1.1 of the Law of the Republic of Kazakhstan "On Copyright and Related Rights" and to state it in the following wording: "the author is an individual whose creative work created a work of science, literature, art, or which is the developer and/or owner, a legitimate user of the artificial intelligence that created such an object".

The doctrine of intellectual property law distinguishes three main positions on the definition of the author of works created by artificial intelligence: its developer, its user, the artificial intelligence itself. The first two opinions are currently the most developed. The author suggests combining them and granting rights to such objects, both to developers of artificial intelligence and its users or owners. Recently, there has been a trend towards the development of the third position, namely the recognition of artificial intelligence as the author of the works created by it. The rationale is a process called kickstarting. However, in the United States, this opinion is considered unacceptable. According to the author of this paper, such a position can be implemented in the case of determining and normalising the optimal model of the legal status of artificial intelligence and solving other issues in this area. Currently, in the world there is already a practice of recognising artificial intelligence as the author of intellectual property objects that it created (for example, in the People's Republic of China) or as an additional inventor (for example, in Germany).

In this article, practical recommendations are provided for improving the national (Kazakh) legislation in the context of legal regulation of this issue. The

materials can be used for further scientific research of the statutory regulation of intellectual property objects created by artificial intelligence and constitute a practical value for improving the quality of the available regulators.

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