INTELLECTUAL PROPERTY, ARTIFICIAL INTELLIGENCE AND CONTRACT LAW: ARE THERE ANY INTERSECTIONS AND FRUITFUL COLLABORATIONS BETWEEN THESE AREAS?

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Annotation. The article contains an analysis of the two main questions regarding AI and IP law: how shall input data used to train AI-systems and how should output results generated by these systems be protected by IP law? In the context of this analysis particular attention is paid on the role of contractual mechanisms used by private parties to resolve these issues in practice. It is concluded that in the situation of doctrinal and legislative conundrum contracts are often used by AI-operators (developers), AI-users, and rightsholders owning input training data to attribute IP rights to certain persons and to protect these rights. However, contractual mechanisms may not always be a good option. Regarding the issue of IP protection of input data contracts (in particular, licensing agreements) may be a helpful tool to get a permission to use data for AI training purposes and to address other related issues. Meanwhile, considering IP protection of AI generated outputs contracts usually serve as a means to monopolize these outputs by AI-operators and developers with no appropriate justification for this monopolization.

Key words: artificial intelligence, intellectual property law, contract law, license agreements, digitalization, rights to input training data, rights to AI-generated outputs.

1. Introduction.

Artificial intelligence (AI) and the way it cooperates with intellectual property law (IP law) is one of the most intriguing issues in the modern legal doctrine. IP law which was initially established to protect human creativity and originality now is regarded as a potential means to protect (wholly or partly) the results of machines' creativity. This tension becomes even more dramatic in light of rapid development of AI technologies, which will inevitably overlap and absorb human creativity in the near future leaving rather small room for truly craft and original results of human activities. A number of cases which take place during present days prove this statement. AI helped to finish a raw and unreleased song of John Lennon "Now and Then", which was subsequently named "The Beatles' last song" [1]. AI is anticipated to make lots of creative professions (like writers, poets, web designers etc.) "fully exposed" to be wholly or partly replaced by the machine according to the OpenAI analysis [2]. The wide use of AI to create scenarios, rejuvenate or even revitalize famous actors provoked the largest strike of the Writers Guild of America in 2023, which was supported by famous actors and ex-president of the USA, Joe Biden [3]. The writers and actors claimed for the limitation of using AI technologies in film industries fearing to be replaced by machines. Finally, AI is already proved

to be able to invent new products and technologies and is claimed to be the patent-owner of its inventions. In this regard the DABUS case is especially illustrated: an AI system DABUS has been created to make inventions mimicking human brain functions, and now its creator, Stephen Thaler, has claimed for granting DABUS patents for its inventions in several jurisdictions [4, p. 11].

The issues which arise at the intersection of AI and IP are numerous. There is no definite answer to questions like (to name but few): shall AI be regarded as an object of IP rights *per se*? May AI use objects of IP rights for training purposes? Shall IP rights cover results generated by AI systems? Who shall be the owner of these IP rights (if any)? How can the one prove that the result was generated by AI or, on the contrary, created by a human? However, the most fundamental and challenging among them seem to be the question of IP law regime over objects used by AI to generate its results (i.e. regime over input training data) and of the regime over objects created by AI or with the use of AI as a tool (i.e. regime over outputs). These issues are closely connected: to produce its outputs AI needs input data, however, the illegal use of input data may result in a lack of rights over the outputs.

By now neither of these fundamental problems have been unambiguously resolved in modern law. Most of the countries have chosen to apply existing IP law doctrines to resolve disputes arising in this context without introducing any amendments into the legislation. Meanwhile, some countries have attempted to provide special rules to cope with the mentioned challenges. Noticeably, Ukraine is among the latter: the new Law on Copyright and Neighboring Rights introduces *sui generis* rights for not original objects generated by computer programs [5]. However, this is only a partial solution to the mentioned problems, which, unfortunately, is not deprived of certain ambiguities and discrepancies.

In view of the lack of statutory solutions to the mentioned AI-IP problems parties who face them in practice (e.g. investors into AI projects, operators of AI systems, users of the AI etc.) try to find practical solutions with private law mechanisms available to them. In most cases these are various contracts (license agreements, data pooling contracts, etc.) where the parties lay down the rules on whom the rights to input and output data belong to, how these rights may be obtained by users or third persons, etc. This tendency is natural for cases where there is a lack of statutory regulation, especially in modern world, where the law permanently goes behind the technical progress. However, contractual remedies to cope with these challenges are very disputable by their nature. First, it is doubtful whether contract terms may attribute IP rights to these or that persons. Second, contracts are usually drafted by a more powerful party depriving the other one on any possibility to influence on their content. Finally, contracts cannot resolve issues going beyond their parties and establish obligations for third persons.

2. Analysis of scientific publications.

The issue of IP rights and artificial intelligence have gained much attention in the latest academic literature. It was specifically analysed by researchers from Max Planck Institute for Innovation and Competition (Josef Drexl, Reto M. Hilty, Luc Desaunettes-Barbero, Jure Globocnik and others) [6], researchers acting within Horizon Europe program (Oleksandr Bulayenko, João Pedro Quintais, Daniel J. Gervais, Joost Poort) [7] and many others. However, there was no research focusing specifically on contract law issues in the context of AI and IP law intersection. These issues were outlined only indirectly, and no particular conclusions have been elaborated.

3. The aim of this work is to find out whether contractual mechanisms are able to resolve complex issues arising in the context of using AI for creative purposes, in particular, when obtaining input training data involving IP objects to train AI and when obtaining output results generated by AI or with its use and deciding on how the IP rights to these results shall be attributed.

4. Review and discussion.

A. IP protection of training data and contractual mechanisms.

The way AI systems are organized makes them constantly consume huge amounts of various data. Data is a fuel for the AI and its basic means to train and to produce required outputs. To gain data operators of AI systems as well as third parties (like data brokers) use various techniques, the most widespread of which are web-crawling (automatic analysis of the code on websites to create an index) and web-scraping (automatic indexing of web-information as well as retrieval and storage of various content from target web-sites) [8, p. 960]. Data retrieved in this way may or may not involve IP-protected objects, but in any case, as a practice shows data owners (or at least those who placed data online) tend to protect them with licenses and license agreements, i.e. in a way IP objects are usually protected [9, p. 231]. Usually, the respective provisions are included into Terms of Use (ToS) of a web-site or in separate documents under various names. For example, ToS of The New York Times journal involve the provision which prohibits web-site users to use robots, spiders, scripts, service, software or any manual or automatic device, tool, or process designed to data mine or scrape the content, data or information, or otherwise use, access, or collect the content, data or information from the services using automated means [10]. Much the same provision is included into the ToS of Concord Music (a large music publisher) prohibiting any form of automatic retrieval to generate information such as patterns, trends, and correlations [11]. Provisions restricting automatic retrieval of data are usually duplicated in a machine-readable form as a "robots.txt" file [8, p. 961].

However, even if there are no restrictions of this kind in the ToS or licenses placed on web-sites, it does not mean that data may be freely retrieved and used to train AI systems. As researchers from Max Planck Institute for Innovation and Competition admit, collections of data used for algorithm training can be protected under the database *sui generis* regime [6, p. 4]. Moreover, particular pieces of data used for training purposes may constitute copyrighted materials (images, photos, music files etc.). Even if they are placed openly on social media, it does not mean they may be used by whoever for whatever purpose, including AI training. Thus, in these cases a person scraping or gaining data for AI training purposes shall generally ask for the permission of a rightsholder, which again comes down to a license agreement. In any case this causes huge transactional costs for companies working with data or being AI operators, which in its turn does not facilitate technical development in whole [12, p. 9].

Although a rapid development of AI accompanied with the mass automatic retrieval of training data has been an issue only of the very recent years, this problem in the context of IP protection has already revealed itself in a number of disputes. During the last couple of years a lot of suits have been lodged against large companies working with the AI, like Open AI, Google, Meta, Github and others. All these disputes involve the alleged violation of copyrighted works (images, journalistic content, music etc.) of plaintiffs by AI operators who gained and used these works without their permission [13]. Neither of these disputes have been resolved by now since they were initiated very recently. However, the number of these cases and the issues raised in them are noticeable as such.

Legislators and researchers on both sides of the Atlantics have made attempts to address the issue of IP protection of AI training data using existing or newly introduced IP law doctrines. The main difficulty in this regard comes down to the need to find a truly balanced solution: on the one hand, IP rights to training data need to be respected, however, on the other hand, these rights shall not be used to the detriment of technological development (in particular, to the development of AI technologies).

In the U.S. scholars often use the doctrine of *fair use* to address the issue of input training data. This doctrine allows to use copyrighted work without the rightsholder's consent if certain criteria are met. According to 17 U.S. Code § 107 the fair use of a copyrighted work for purposes such as criticism, comment, news reporting, teaching, scholarship, or research, is not an infringement of copyright. There are four factors determining whether the use is fair: (1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes; (2)

the nature of the copyrighted work; (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and (4) the effect of the use upon the potential market for or value of the copyrighted work [14]. Some U.S. scholars conclude that the retrieval and use of input data for AI training purposes is covered by fair use exception since it comes down to teaching and research purposes, the data used in training is not revealed in the outputs, the purpose of using IP-protected data by the AI substantially deviates from the purposes for which this data has been created, and the use of this data for AI training does not impact on the market for this data since works generated by AI based on this data do not substitute the original IP-protected data (they are completely different from the original) [15, p. 2679-2675]. However, some scholars object to this statement and conclude that fair use exception does not cover IP issues related to AI training data. In particular, David W. Opderbeck emphasizes that the use of training data by AI is usually commercial, while the technical process of such use involves temporary retrieval and copying of original works, which precludes applying fair use doctrine. The researcher thus suggests exploring alternatives, the main among which is a licensing, i.e. gaining consent from rightsholders for gathering and using their coneent for AI training purposes [8, p. 1023]. However, the final word in this discussion will belong to the U.S. courts and their *ratio decidendi* in the disputes already pending or the ones that will arise in future.

For the European countries, unlike the U.S. the doctrine of fair use is uncommon. Since most of these countries represent a civil law tradition, there are some particular exceptions in the legislation allowing free use of various IP objects (like citation, the use of some pieces of works for education purposes etc.), however, these exceptions are much narrower than the ones covered by the American fair use. That is why when the discussion on IP-protection of training data has arisen in the EU, a new legislative solution has been proposed, which came down to a new exception allowing free use – text and data mining exception (TDM). This exception has been introduced in the Directive 2019/790/EU on copyright and related rights in the Digital Single Market and is explained in its Preamble as a means to combat the legal uncertainty concerning automated mining of huge amounts of data by universities, other research organisations and cultural heritage institutions (para 11 of the Preamble) [16]. Article 2 of the Directive defines TDM as any automated analytical technique aimed at analysing text and data in digital form in order to generate information which includes but is not limited to patterns, trends and correlations. The TDM exception basically is established for research organizations and cultural heritage institutions to carry out, for the purposes of scientific research, text and data mining of works or other subject matter to which they have lawful access (Article 3(1)). Para 14 of the Preamble explains that lawful access covers access to content based on an open access policy (i.e. open acess online) or through contractual arrangements between rightsholders and research organizations or cultural heritage institutions, such as subscriptions, or through other lawful means. Meanwhile, the Directive also provides special TDM exception for other entities (besides research and cultural heritage organizations): these other entities (including private businesses) may also make reproductions and extractions of lawfully accessible works on condition that the use of works and other subject matter referred to in that paragraph has not been expressly reserved by their rightsholders in an appropriate manner, such as machine-readable means in the case of content made publicly available online (Article 4 (1) (3)). This provision is explained in para 18 of the Preamble as meaning that if the rightsholders have made content available to the public online and have not reserved in an appropriate manner the rights to make reproductions and extractions from this content, interested parties shall have a lawful possibility to freely make such reproductions and extractions. It should only be considered appropriate to reserve those rights by the use of machine-readable means, including metadata and terms and conditions of a website or a service. Thus, unless rightsholders have restricted TDM by, in particular, AI operators, in their ToS or machine-readable terms, training data may be retrieved and used without limitations.

However, TDM exception still is quite narrow and oftentimes does not address the issue of retrieving data for AI training purposes. Basically, this exception covers only cases when such data is gathered by research and cultural organizations, while for other entities this opportunity may be easily limited by restrictions established by rightsholders in their ToS onerously. For this reason, researchers from Max Planck Institute have opted for licensing (contractual) regime of addressing this issue [6, p. 4].

As the comparative analysis of the U.S. – EU law shows, the issue of IP-protection of data used for AI training purposes and exceptions to this protection inevitably come down to contractual regulation at least to some extent. In the U.S. contractual (licensing) regime seems to be more reliable than fair

use exception: in the absence of case law and legislative provisions it is obviously more preferable for AI operators to rely on agreements with rightsholders than to risk restricting their business activity and generation of creative works because of the violation of IP rights to training data. In the EU only research and cultural heritage organizations may fully enjoy TDM exception and use data from open sources without rightsholders' permission. However, for the rest of entities this possibility will most likely be closed since web-site owners and rightsholders will always tend to prohibit scraping their sources and using their data for AI training purposes. These limitations of fair use and TDM exceptions seem to be justified: it is not enough clear why the development of AI technologies for commercial purposes should enjoy broader exceptions and for what reason rightsholders' rights should be limited to a higher extent. Thus, in this regard contractual mechanisms seem to be the most balanced option: generally, data containing IP-protected works shall be gathered and used for AI training purposes under rightsholders' consent. This consent generally shall be free and subject to license or other similar agreements between rightsholders (their agents or other representatives) and interested persons (usually AI-developers or operators). In cases where significant public interests in the development of AI-technologies are involved (like healthcare, state security, ecological issues) there may be a need to introduce compulsory licenses regime, for which purposes legislative amendments are needed. Of course, it may be difficult to introduce a well-functioning and effective "market for rightsholders' consent" in practice and transaction costs for AI-developers will remain high. However, these obstacles may be overcome by market forces *per se* by virtue of instruments like data pools, data brokers and other professional entities acting in the field of data trading.

B. IP protection of results generated by AI or with its use. AI systems were specifically invented to introduce mechanisms that could substitute human cognitive and creative abilities to the highest extent. Before 2010s there were a lot of attempts to create mechanisms able to think and to act as a human being (computer programs, algorithms etc.), however, only modern AI-systems by virtue of machine learning, neural networks and other technologies satisfy these criteria. Naturally, modern AI systems can produce innovative and creative products just like humans do (e.g. images, music, inventions, know how etc.).

This ability of AI systems causes a number of questions concerning IP-protection: can these products (outputs) be subject to IP protection and, if yes, who shall be considered as their author (rightsholder)? By now various solutions to these issues have been introduced in academic literature as well as in the legislation and case law of different countries.

There is an opinion that AI-generated outputs are always subject to IP-protection since modern AI-systems are not fully autonomous and human impact on the generated results is still rather important. Following this line, it is concluded that any AI-generated output has its author (rightsholder) and this is a user who provided it with input request [17, p. 400].

There is a contradicting opinion which regards AI itself as an author or inventor (a rightsholder). The rationale behind this idea is that AI possesses creative abilities [18]. Meanwhile, regarding patent law there is no definite requirement that only a human being may be an inventor. This reasoning underlies the series of DABUS cases described in the introduction, and partly these arguments are accepted in some jurisdictions (e.g. Australian courts agreed that there was no basis to exclude AI from being an "inventor") [4, p. 12].

However, most scholars and legal practitioners agree that AI as such shall not be granted IP rights over outputs it creates. The most common opinion in this regard comes down to a statement that IP-rights over outputs depend on human contribution to these outputs, in other words – on whether the outputs have been generated entirely or substantially by an AI system or by a human using the AI as a tool. If the output is generated by the AI (entirely or substantially), it is not subject to IP protection at all and goes into the public domain. However, if it was generated by AI which was used as a tool by a human, it is IP-protectable and a user of AI-system who contributed to the creation of the output may be considered as a rightsholder [19, p. 376]. This is particularly typical of copyright, which is based on anthropocentric understanding of copyrightable works and the need for them to be original and creative [20, p. 577]. Noticeably, this approach has been supported by the European Parliament in the Resolution on intellectual property rights for the development of artificial intelligence technologies [21].

There is yet another view on the issue of IP rights over AI-generated works. Noticeably, it has already been supported in the statutory law of a number of countries. This approach is based on the idea that AI-development itself and investments into AI systems need to be supported with exclusive rights to works created by AI [12, p. 11]. Initially it was introduced in UK law back in 1988 when for copyright protection it was provided that if "a literary, dramatic, musical or artistic work 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". Computer-generated work is defined as a work created with no human author or work. Noticeably for such works the UK law establishes a shortened period of protection – 50 years from the end of the calendar year in which the work was made [22]. Much the same provisions later were introduced in the legislation of other common law countries, in particular, Ireland, South Africa, India, and New Zealand [7, p. 101]. A very similar provision has recently been introduced in Ukrainian legislation. A new Law on Copyright and Neighboring rights adopted in 2022 in its article 33 establishes *sui generis* right to non-original objects generated by a computer program. This right appears if an object is generated without direct involvement of a natural person into its creation and is granted to persons who have rights to a computer program or who are granted such rights under license, their successors, persons to whom rights to the computer program have been granted or lawful users of the computer program. The *sui generis* right appears from the moment an object is generated and lasts for 25 years from the beginning of the next year after its creation [5]. Thus, Ukrainian legislation currently follows the general idea underlying British law in this regard – to protect rights of persons who invested and worked on creating facilities allowing to generate quasi-copyrightable works. The main difference is that while British law regards such persons as authors and the works – as objects of copyright protection, Ukrainian law considers these persons as rightsholders of *sui generis* rights and these works – as objects of these rights, but not copyright.

However, the latter approach has gained much critics in academic literature. Researchers in the field of economics and law state that it is not economically justified to grant persons who develop AI-systems and computer algorithms with exclusive rights to the products generated by them: these persons already have exclusive rights to these systems and algorithms, and granting rights to downstream developments of these systems may lead to monopolization of the market of generated products [19, p. 365]. British approach is also criticized for ambiguity in terms of identifying a rightsholder to computer-generated works. A wide number of persons may be considered as the ones who "undertake arrangements necessary for the creation of the work": these could be operators of a computer, the person providing input for its operation, or the programmer [20, p. 579]. Ukrainian legislation is more precise in identifying such person specifying that this can be a person having rights or licensed permission to use a computer program generating products. However, this attribution is also debatable since it is very doubtful whether modern AI-technologies used to generate outputs may qualify as a computer program. The researchers from Max Planck Institute have come to the conclusion that neither machine learning models nor algorithms underlying AI-systems fall under the concept of 'computer program'. This conclusion is based on the fact that AI involves various algorithms and technics, is not a strictly-determined system (unlike classical computer programs), can learn during its operation process, create new computer programs, etc. Thus, it may be extremely difficult to identify which program lies behind generation of a particular output and from which moment the copyright protection of this program appears [6, p. 18-19]. Besides, both British and Ukrainian approaches are difficult to apply regarding current state of technological development of AI-systems. There is no AI-system which is entirely autonomous – every system needs at least some input to be made by a human. Even if this input is minimal, it is still quite difficult to identify where an output is generated without direct human involvement and where it is generated with such an involvement [23, p. 153].

Although there are a lot of various approaches to identify IP-regime for AI-generated outputs, the most widespread among them is the one which is based on the differentiation of the role of an AI-system in the creation of the output. If the output is created by an AI-system autonomously or with a very minimum of a human contribution, this output is not IP-protectable (as the European Parliament concludes) or may be covered by exclusive rights granted to persons who arranged facilities for its creations (as British and Ukrainian laws say). Meanwhile, if the output is created by an AI-system used by a human as a tool, and the human contribution is original and creative, then the output is IP-protectable and humans who made creative and original contributions to its generation should

be granted with IP-rights. However, still there is no uniformity and certainty in this issue neither at national nor international level.

In these circumstances of uncertainty private parties interested in IP-protection of AI-generated outputs naturally tend to use private law mechanisms. As in the case of IP-protection of input data analyzed above, in this case IP-protection issues are identified in contracts between AI-operators (developers) and users of AI-systems. For instance, Terms of Use of OpenAI (a company operating ChatGPT) attribute ownership rights to both input and output content to a user and claim that it holds IP rights only to a service itself [24]. However, this is an exceptional case since lots of AI-operators tend to occupy IP-rights to any output generated by AI-system they operate regardless of the contribution their users make to get the requested output. As a research provided within "ReCreating Europe" project, most of neural networks and other AI-systems used to create music or assist in this creation claim authorship and/or ownership over music created with the use of their AI-systems [7, p. 65]. However, most of these systems are constructed in a way that allows and makes it necessary for users to contribute to the process of AI-generation (by providing training data, making creative choices, making corrections in output results etc.), so that the outputs usually may not be said to be wholly autonomously generated. This is true, in particular, for AIVA AI-system which regards itself as a licensor of generated outputs [25], AlgoTunes [26], and Boomy [27]. This analysis shows that AI-operating companies tend to have rights not only in service they offer itself but also in downstream products of such services. Besides, these companies totally disregard whether there is a contribution made by a human in the process of generation of the output and which role this contribution plays in the end result. Since bargaining position of AI-operators is initially stronger (they can draft contracts, determine their terms, while their users may only choose to agree or not to agree with these terms in their entirety), they can embody their IP ambitions using their ToS, End service license agreements etc. if fact onerously.

However, unlike contractual mechanisms used to determine IP-protection of input data, contractual mechanisms for AI outputs may not be considered effective and reliable. Contract as a basic instrument of private regulation cannot resolve issues which by their nature shall be resolved universally for all interested parties (not only contracting parties) in legislation or case law. Thus, we agree that a determination of authorship or other IP-rights cannot be decided by means of private contracts [7, p. 67]. Contractual mechanisms currently used in practice in most cases do not provide certainty to the issue of attribution of IP-rights, but rather may be the cause of disputes and ambiguity in practice considering these issues. Although they will unlikely be taken into account as such by courts when resolving such disputes, one should mind that far not all the disputes reach courts and how these "out-of-courts" disputes will result in practice is an uneasy question.

Therefore, with regard to IP-protection of outputs generated by or with the use of AI-systems there needs to be a uniform doctrinal and ideally statutory solution. Although some jurisdictions have already adopted provisions concerning this issue, they may not be called indisputable. Anyway, contractual way to attribute IP-rights to the outputs generated by or with the use of AI is not the option, and the sooner there is a uniform solution for this issue, the better for practice and for the technological development in whole.

5. Conclusions.

The development of AI-technologies has caused a number of challenges for traditional IP law. The main among them is the IP-protection of input data containing IP-objects which is used to train AI-systems and IP-regime of outputs generated by or with a use of AI as a tool. In the lack of certain statutory and doctrinal solutions for these issues there is a tendency to address them in contracts between AI-operators (developers) and users of AI-systems.

Regarding IP-protection of input training data contractual mechanisms seem to be justified and effective. Not all the cases of retrieving input data for their subsequent use for AI training purposes are covered by exceptions providing an opportunity to use IP-protectable data without rightsholders consent. Thus, in the cases where such exceptions cannot be applied the best option is to rely on the provisions established by rightsholders in the licenses they propose. However, the role of legislators

in this regard is to determine whether there is a need for compulsory licenses and in clarifying the issue of open licenses at a statutory level.

IP-protection of output results generated by or with the use of AI is a different issue. Although there is no uniform solution for it either, contractual mechanisms to determine whether there are IP-rights to these outputs and to whom they should be attributed is not the option. Contractual provisions established by AI-operators and developers in their ToS usually tend to create monopoly over AI-generated outputs regardless of the value of a human contribution in producing these outputs. Thus, in this regard a uniform doctrinal and legislative solution should be found. Contractual provisions established by companies shall not be automatically taken into consideration in practice by courts and other practitioners – they shall be critically analyzed in each case, while the final decision shall be made using existing IP-law doctrines and legal provisions.

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