"IP RIGHTS AND AI - THE IMPACT OF THE NEW EU AI ACT AND PROSPECTS OF FUTURE LEGISLATIVE INTERVENTIONS"

Research Paper

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"Abstract"

The paper examines what will be the impact of the EU AI Act, once adopted, on certain intellectual property rights (IPR) related areas in which Artificial Intelligence (AI) systems might pose challenges. Several areas identified as being challenged by the application of AI are analyzed: ownership and authorship of works generated by the AI system or with the help of the AI system; protecting technology underlying an AI system with IP rights; protection of IP rights of third parties when training and operating an AI system (IP rights might be infringed by training an AI system on IP protected content, as well as while operating an AI system when AI systems generates content which is IPR infringing or where an AI system acts as an intermediary whose services are used to infringe IP rights) and the influence of the application of AI on the well-established legal standards. By examining whether the AI Act addresses or might be used to help solving the outstanding issues in each area identified, the paper further suggests where adoption of new legislation in the IP field might be called for and expected.

Keywords: Intellectual property rights, AI Act, IPR infringement, Secondary liability

1 Introduction

In April 2021, the European Commission proposed the first EU regulatory framework for AI (EC, 2021). On 14 June 2023, the European Parliament adopted its negotiating position (with 499 votes in favour, 28 against and 93 abstentions), which initiated the so called trialogue procedure.

The initial proposal of the EC from 2021 was the starting point of such negotiations, but the final decision was made by the two co-legislators: the EP and the Council. In its negotiating position, the EP has proposed some significant changes to the initial proposal of the EC (EP, 2023). The Council, which in fact represents the position of national governments of the EU member states, has adopted its general approach already in December 2022 (Council, 2022). On 9 December 2023 the Parliament and the Council reached a provisional agreement on the AI Act, which has finally shaped the EU regulatory framework for AI. The final wording of the AI Act, updated according to the provisional political agreement reached at the fifth trilogue between 6 and 8 December 2023 was recently made available by the Council (Council, 2024).

Eventough the AI Act still needs to be formally adopted, we can now access the final wording of the EU AI Act and analyze some aspects the EU will regulate in its forthcoming AI Act, announced as the world's first comprehensive AI law. Once adopted, this Act might quickly spread globally and become the universal standard which other countries will follow, similarly as the EU's GDPR (General Data

Protection Regulation) some years ago, in what is sometimes referred to as the "Brussels effect" (Bradford, 2020).

The AI Act aims at establishing a legal framework for trustworthy AI. The objective is to ensure that AI systems placed on the EU market and used are safe and respect the existing law on fundamental rights and EU values. The principle-based requirements that AI systems should comply with are set and a risk-based approach is taken. It defines 4 levels of risk in AI: unacceptable, high-risk, limited risk and minimal or no risk (EC, 2022a). Certain particularly harmful AI practices which are defined as unacceptable risk are prohibited as contravening EU values: AI systems which classify people based on behaviour, socio-economic status or personal characteristics ("social scoring") or perform some sort of cognitive behavioural manipulation of people as well as specific vulnerable groups like children are prohibited as such. Real-time and remote biometric identification systems, such as facial recognition are also prohibited (however, biometric identification systems where identification occurs after a significant delay are exceptionally allowed to prosecute serious crimes, but only after court approval.). However, the legislative proposal mostly focuses on the so called "high-risk" AI systems that pose significant risks to the health and safety or fundamental rights of persons. The EC has mostly tailored its legal intervention to address these "high-risk" AI systems because it considers there is a justified cause for concern, or such concern can reasonably be anticipated. Those AI systems will have to comply with a set of horizontal mandatory requirements for trustworthy AI and follow conformity assessment procedures before they can be placed on the EU market. AI systems such as chat bots, emotion recognition systems and deep fakes are seen as limited risk AI systems and are only subject to transparency obligation (Article 52). For example, a chat bot must be designed and developed in such a way that natural persons are informed that they are interacting with an AI system, unless this is obvious from the circumstances and the context of use. Those AI systems that are considered minimal risk such as video games or spam filters are not in any way regulated by the AI Act, however the EC will encourage and facilitate their self-regulation by adopting voluntary codes of conduct (Article 69).

In doing so, the legislative proposal significantly departs from being, what is announced as, a "comprehensive" AI law. In other words, if an AI system is not considered a threat to people (for example voice-activated toys that encourage dangerous behaviour in children) or does not fall into the "high-risk" category (for example AI systems for recruitment), there is only the transparency obligation it has to adhere to, and the rest of the AI Act would not apply to it (EC, 2022a).

Rightly so, one of the key amendments the EP has proposed is to establish certain requirements that would apply to all AI systems, even those that for the time being seem lawful, safe and trustworthy and not threating our fundamental rights and EU values. What the EP is basically saying is that, while many AI systems pose minimal risk, they neverthless need to be regulated and general principles for the development and use of all AI systems need to be set. A proposal to include a provision titled "General principles applicable to all AI systems" in the EU AI Act was therefore made by the EP. However, that proposal, that would render the AI Act more comprehensive by ensuring that all AI systems, irrespective of the risk that they pose, would have to follow the principles of "human agency and oversight", "technical robustness and safety", "privacy and data governance", "transparency", "diversity, non-discrimination and fairness" and "social and environmental well-being" (EP, 2023) was not accepted in the final version of the AI Act.

It should be noted that the initial EC's proposal also did not mention generative AI. In their defense, one should admit that the AI Act proposal was made in April 2021 and there was a quick-paced technological breakthrough which has since radically changed the potential of these technologies (EP, 2023). Only after the launch of the ChatGPT in December 2022 and the AI-powered Microsoft Bing and Edge in March 2023 did the general public become aware of their potential, but also of the concerns and risks associated with them and of the impact they might have on a range of issues. So, another key amendment that the EP has made is addressing foundation models and generative (or general purpose) AI. The general approach taken by the Council in December 2022 has also proposed to consider general purpose AI and, in particular, situations where general purpose AI technology is subsequently integrated into another high-risk system. However, the Council proposes that certain requirements for high-risk AI systems would also apply to general purpose AI systems in such cases,

but an implementing act would specify how they should be applied in relation to general purpose AI systems (Council, 2022).

The proposal of the EP refers to "foundation models", a form of which is generative AI. Such AI models are trained on a very broad range of sources and large amounts of data – and can be used for many different applications. However, the providers of such AI models need to adhere to certain specific obligations. The providers must guarantee robust protection of fundamental rights, health, safety and the environment, democracy and rule of law; they have to assess and mitigate risks associated with the model; introduce practical measures in the design and development of the model to ensure certain standards are met and they have to register the model in the EU database, introduced by the AI Act. Additional transparency requirements were imposed for "generative" foundation models (disclosing that AI-generated the content; designing the model to prevent it from generating illegal content; publishing summaries of copyrighted data used for training; and supporting innovation and protecting citizens' rights). Exemptions from those obligations and requirements for foundation models in general and generative AI in particular would be made for research activities and AI components provided under open-source licenses.

In the provisional agreement which represents the final version of the AI Act, provisions have been added to address the specific cases of general-purpose AI (GPAI) systems and for foundation models, which must comply with specific transparency obligations before they are placed in the market. A stricter regime was introduced for 'high impact' foundation models that are trained with large amount of data and with advanced complexity, capabilities, and performance well above the average, which can disseminate systemic risks along the value chain. An AI Office within the Commission is set up tasked to oversee these most advanced AI models (Council, 2024).

While not elaborating on other EP proposals made to the AI Act, we will try to analyse whether the AI Act is a comprehensive piece of legislation or additional legislation or whether amendments to the existing legislation might be needed to regulate certain aspects in which AI might pose challenges. The focus will be the intellectual-property rights (IPR) legal framework. The research methodology includes a comparative analysis of available legislation in the IPR field, current legislative proposals around AI systems and policy documents of the European Union.

2   Discussion

It is quite sure that the AI Act will not be the only legislation concerning AI in the EU and therefore comprehensive. Even if the EP's proposal was taken aboard in the AI Act, and the scope of the AI Act and the minimum requirements set therein were not extended to all AI systems, regardless of the risk they pose, that would still be the case. It was obvious from the outset that the EU will have to regulate some areas concerning AI systems with specific and additional legislation and that the AI Act will not be the only legal intervention necessary. One example is the proposal for a Directive on adapting non-contractual civil liability rules to artificial intelligence (AI Liability Directive), which was made by the EC in September 2022 (EC, 2022b). This Directive addresses the specific challenges posed by AI systems to the existing liability rules since current national liability rules, based on fault, are not suited to handling liability claims for damage caused by AI-enabled products and services. It is seen as a part of a package of measures to support the roll-out of AI in Europe and is complementary to the AI Act which lays down horizontal rules on AI systems. It introduces new rules specific to the damage caused by AI systems by creating a "rebuttable presumption of causality". So if somebody claims damages from the provider of the AI system, he/she/it would not have to prove that the defendant (AI system provider) was at fault so long as: (a) the AI system's output (or failure to produce an output) was reasonably likely to have caused the damage; (b) that damage or harm was caused by some human conduct influencing the AI system's output, and (c) the conduct did not comply with a certain obligation relevant to the harm i.e. did not meet the duty of care under EU or national law that was directly intended to protect against the damage that had occurred. The failure to meet this duty of care can be established if the defendant did not comply with the horizontal rules on AI systems (for example obligations for "high-risk AI Systems") set in the AI Act (EC, 2022b).

In intellectual property field there are several areas with possible implications of the use of AI systems already identified in reference works (Iglesias et al. 2019; Batty 2021). These are analyzed against the proposed AI Act to find out whether the AI Act has addressed them, whether there are any amendments to the existing legislation in the field or whether adoption of new legislation foreseeable, and if so, what would be the possible scope of such legislative intervention.

2.1 Intellectual Property Generated by the AI System or with the Help of the AI System

The first possible implication of the use of AI systems that needs to be discussed is the protection of the results generated by or with the help of AI. How should we treat those inventions, works and other objects that were created by the AI system or with the help of the AI system and whether they could possibly be granted some intellectual property title should be considered. In other words, if an AI system composes some music or comes to a technical invention, whether such work can be copyright protected or is it going to be possible to register a patent for it. This implication was identified relatively long ago and there is already a lot of research on the subject (Iglesias et al. 2019). There are court cases as well, where applicants have challenged the existing IPR legal framework to protect the results generated by or with the help of AI (Iglesias et al. 2019). The DABUS case, being the most cited court case, dealt with a patent application for an invention created by an AI system called DABUS. By filing a patent application in which DABUS was designated as the inventor in many countries around the world, it has showed that almost universally these attempts were refused[1] because it was held that the inventor can only be a natural person, i.e. a human being. The same is applicable in case of copyright since it is mostly human centered: the principles of "originality" and "intellectual creation" underlying copyright protection seem to be linked to a natural person and address the author's personality (EP, 2023). In the same vein as Naruto, a monkey who took a grinning "selfie" with a photographer's camera cannot be declared the copyright owner of the photos (famous PETA vs. David Slater case), neither are works autonomously produced by AI systems eligible for copyright protection. But, if an AI system only helps a human in creating or inventing, everything seems to be fine. AI-assisted human creations are in compliance with the current IP laws as long as a human is declared the inventor or author. Such creations can be protected, but only if the AI was used as a tool to assist a human in creating and inventing. However if the creator of DABUS, Stephen Thaler, declared himself the inventor of the patent, the patent office would not be able to assess, if not disclosed by him, whether he was only assisted by DABUS or the invention was entirely AI-generated. It would be vulnerable to attacks by competitors who might be interested to have the patent opposed by demonstrating that the patent was not invented as claimed. However, it is doubtful that such attempts would be successful and that competitors would be able to prove it (Hellen et al., 2021). There are countries that have set up laws to protect computer-generated works. By observing the basic principles of copyright, the protection is granted not to the AI but to the "person who set up the arrangements necessary for the creation of work" (Iglesias et al. 2019). This approach makes sense, since it only legalizes what would be anyhow achieved if the person claiming protection does not reveal to the authorities that the work was AI-generated. Legal scholars have discussed the issue of inventorship and authorship at length, and their views are quite divergent on the issue: some propose denying any protection to AI-generated content and placing them into public domain, others opt for

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[1] *Artificial Intelligence and Intellectual Property Strategy Clearing House* is a data base operated by the World Intellectual Property Office. It collects and publishes the main government instruments of relevance to AI and IP with the aid of the Member States. Member States are invited to inform WIPO about any updates in their policies. The above research was undertaken by a query: "Case law for AI and IP"; detailed results available at: *https://www.wipo.int/about-ip/en/frontier_technologies/strategy-search.jsp?territory_id=&policy_id=2434 (accessed 24 December 2023).*

creation of some sort of *sui generis* right, while few propose to afford a computer to be named an inventor or an author (Iglesias et al. 2019).

Since trademarks do not have the equivalent of an author or inventor, AI does not affect the trademark system in the same way as the patents, designs and copyright systems in this regard (Casey, 2020).

A horizontal legislation such as the AI Act obviously did not address this specific issue. However, based on the EP's proposal, which is now incorporated in the final AI Act, generative foundation AI models (such as ChatGPT), that use large language models to generate art, music and other content, have to disclose that the content was generated by AI and not by humans. Outputs of the AI system have to be marked in a machine readable format and detectable as artificially generated or manipulated (Council, 2024). This is certainly going to be helpful in distinguishing AI-generated inventions.

Furthermore, it is likely that some legislative initiative could be expected to address the above issue in more detail. The "European Parliament resolution of 20 October 2020 on intellectual property rights for the development of artificial intelligence technologies" clearly suggests the EP is urging the EC to consider amending the current IP framework in order *to protect technical creations generated by AI* and enact *common, uniform copyright provisions applicable to AI-generated works in the EU in order to encourage investment in this form of creation and improve legal certainty*. Further, the EP *recommends that ownership of rights, if any, should only be assigned to natural or legal persons that created the work lawfully*. In the Explanatory statement underlying the resolution, the EP elaborates that this is because it considers the role of human intervention remaining fundamental to the programming of AI devices, the selection of input data and the application of the results obtained. As regards copyright, the EP cites the example of the 'Next Rembrandt' painting which was generated after 346 works by the painter were digitized so that they could be processed using AI and concludes that this shows that *an AI-generated creation could be deemed to constitute a work of art on the basis of the creative result rather than the creative process*. However, the EP doesn't consider it *to be appropriate to seek to impart legal personality to AI systems* when discussing ownership of IPRs covering that content and points out that this would *negatively impact human creators*. Given the EP Resolution, but also taking into account the approach of the EC underlying the AI Liability Directive, we could also expect whatever kind of protection afforded might only be available to those works generated by AI systems which comply with horizontal rules on AI systems (for example obligations for "high-risk AI Systems") as set out in the AI Act. This would also be consistent with the otherwise applicable public policy and morality exclusion on patentability. Although this exception relates to cases where commercializing a given technology would be contrary to European legislative or otherwise democratically established policy (i.e., public policy) or norms accepted as fundamental to European society (i.e., public morality) (Pila, 2020), it makes perfect sense that inventions generated by an AI system operating against public policy and public morality should not be granted patent protection.

2.2   Intellectual Property in the Technology Underlying an AI System

The protection of artificial intelligence by intellectual property has also been widely discussed and there is a significant number of papers on the subject (Iglesias, 2019). This relates mainly to the question of patentability of inventions on core AI technology itself, but also to AI-based inventions; namely inventions in which AI is part of the inventive concept (WIPO, 2023). Further it relates to protection of AI systems through trade secrets, while copyright, design protection and trademark protection around AI does not seem to be controversial.

Patent protection is available for inventions in all fields of technologies as long as they are not excluded from patentability. These exceptions are not harmonized globally. For example, Article 52 of the European Patent Convention (EPC) states that computer programs *per se* shall not be considered patentable inventions. In the United States of America, there is no specific exclusion of software from patentable subject matter. Therefore, the as AI technologies are classified as subsets of computer

software, current US laws are adequate for patent protection of both AI technology and AI-based inventions (WIPO, 2022). On the other hand, Europe seems to be struggling with patentability of AI technology for several reasons. Computer programs *per se* cannot be protected, and because AI technologies are based on computational models and algorithms, which are regarded as mathematical methods, there is yet another exclusion applicable since abstract mathematical methods are not patentable. However, EPO guidelines clarify that if a patent claim is directed either to a method involving the use of technical means (e.g. a computer) or to a device, its subject-matter has a technical character as a whole and is thus not excluded from patentability. This opened the door to AI-related patents being granted. For example, the use of a neural network in a heart monitoring apparatus for the purpose of identifying irregular heartbeats makes a technical contribution and my be patented. There were, however, still some doubts on the patentability of a method of training an AI- or machine-learning algorithm, or to a method of generating training data for this purpose. Here the EPO guidelines have introduced the so called "plausibility requirement" by which it is possible to patent such methods if "a classification method serves a technical purpose, the steps of generating the training set and training the classifier may also contribute to the technical character of the invention if they support achieving that technical purpose" (EPO, 2023 update) i.e. that it is at least made plausible by the disclosure in the application that its teaching solves indeed the technical problem it purports to solve (Pila, 2020). There are also some other issues on how standards of patent protection can be met in AI-related patents. For example, the disclosure requirement which should be strictly applied in order to avoid patenting the so called "black-boxes", but might be hard to satisfy due to the unpredictability of certain AI systems (Iglesias, 2019) and in view of the complexity of the reasoning for certain AI technologies (EP, 2023). It further raises the question whether the data used to train an algorithm should be disclosed or described in the patent application (Castets-Renard, 2020). Another example is the public policy and morality exclusion on patentability, which should be adapted in case of AI-related patents to be able to recognize and confront the uncertain consequences of new technologies and their implications for society (Pila, 2020).

AI systems are copyright protected, but it has to be mentioned that this kind of protection extends only to the expression of the AI, i.e. the original code of the algorithm, whereas the concept, ideas and principles which it comprises are not protected. This, with patent protection being difficult to afford and achieve, might lead developers to protect their creations with trade secrets, which is an informal type of intellectual property that may suit the purpose of protecting AI technologies with a kind of "informal" monopoly by keeping the technology underlying an AI system secret from other competitors. There is, however, always the risk of competitors developing the same independently or revealing the technology by reverse engineering.

As in case of IP created by the AI system, the AI Act does not specifically address this issue, but might be a corner stone for solving some of the problems around it. For example, it will certainly help the authorities when applying the public policy and morality exclusion on patentability. Instead of performing a detailed risk assessment which would involve creating a special morality and public policy triage system within the patent authority (as suggested by Pila, 2020) evaluation of when a commercializing of a given technology would be contrary to European legislative can be linked to non-compliance with horizontal rules on AI systems as set in the AI Act. A technology that does not satisfy the requirements under the AI Act (for example obligations for "high-risk AI Systems") would not satisfy the public policy requirement and would therefore not be patentable. The EP Resolution shows the EP seems to be satisfied with the existing legislative framework for patenting AI technology, but calls on the EC to undertake legislative work in regulating standard essential patents (SEP), which are patents that protect technology essential to implementing a standard. Regulating them in a way that would obligate patent holders to offer their SEPs on fair, reasonable and non-discriminatory (FRAND) licensing terms the EP considers to play a key role in the development and dissemination of new AI and related technologies. The EP is more concerned with protecting trade secrets in future regulatory framework for AI, in particular as regards any detailed requirements for the narrow set of applications deemed 'high-risk'. It should be noted that in light of these concerns, a number of EP proposals was made to the initial proposal of the AI Act which aim to ensure the

preservation of trade secrets underlying a high-risk AI system. For example, when under the AI Act the notified body is granted access to the training and trained models of the AI system, including its relevant parameters, such access shall be subject to the existing EU law on the protection of intellectual property and trade secrets. They shall take technical and organizational measures to ensure the protection of intellectual property and trade secrets. Although the initial proposal of the EC already contained some general safeguards in relation to intellectual property rights, confidential business information or trade secrets of a natural or legal person, including source code, the EP's proposals significantly strengthen them and this is going to be reflected in the final version of the AI Act as well.

2.3   Protection of Intellectual Property when Training and Operating an AI System

There are also concerns that existing IP titles may be infringed by an AI system.

Mainly these concerns have concentrated around copyright and *sui generis* database right (envisaged under the EU Database Directive) since AI techniques are often trained by large amounts of data. Some of the data may be raw, but some may be organized in databases for which database makers hold the right or the data may be non-personal, such as texts, sounds, images and alike, which are copyright protected (Iglesias et al. 2019). Some authors point out that AI techniques may also infringe trademarks and report of a court case filed in the US in 2023 where Getty, an image licensing service, filed a lawsuit against the creators of Stable Diffusion, alleging the improper use of its photos, both violating copyright and trademark rights it has in its watermarked photograph collection. Regarding copyright, in the US the use of copyrighted content might be allowed under the fair use doctrine which allows for a transformative use of the copyrighted material in a manner for which it was not intended Without precedents to rely on, developers may wish to ensure that they are in compliance with the law with regard to their acquisition of data for training their models. This should involve licensing and compensating the individuals who own the IP that developers seek to add to their training data, whether by licensing it or sharing in the revenue generated by the AI tool (Appel et al., 2023). Developers in the EU should apply the same approach, provided they are not covered by the existing text and data mining exception. The existing legislation recently enacted in the EU contains rules on limitations and exceptions to copyright and database sui generis rights protection in case of text and data mining for the purpose of scientific research by research and cultural heritage institutions. Another exception applicable to everybody envisages the so called "contract-out": anyone (private companies as well) can use works under copyright or database *sui generis* rights protection provided that the rightsholders have not reserved this right by appropriate means. Some authors have criticized this solution and argued that there should be no need for a text and data mining exception in respect of the act of extracting informational value from protected works (Margoni and Kretschmer, 2022).

Apart from infringing IP rights by training on IP content, an AI system can infringe IP rights while operating - this may happen when, by using an AI system, the output it creates infringes certain IP rights. Appel et al. report of a case filed in late 2022, Andersen v. Stability AI et al., where three artists formed a class to sue multiple generative AI platforms on the basis of the AI using their original works without license to train their AI in their styles, allowing users to generate works that may be insufficiently transformative from their existing, protected works, and, as a result, would be unauthorized derivative works, which amounts to copyright infringement (Appel et al., 2023). Following the aforesaid, another example would be the case in which AI has an impact on the information available to consumers and their purchasing decisions. In doing so, it may influence the consumer to purchase an infringing product, and the consumer might be liable for trademark or design infringement.

A proposals made by EP has partially address these concerns. The EP has proposed that providers of foundation models and "generative AI" would have to be obliged to train, and where applicable, design and develop the foundation model in such a way so as to ensure adequate safeguards against the generation of content in breach of EU law, in line with the generally-acknowledged state of the art,

and without prejudice to fundamental rights, including the freedom of expression. In plain words: the model would need to be designed in order to prevent it from generating illegal i.e. IPR infringing content. However, this EP proposal has not been accepted and is not contained in the final version of the AI Act. What is agreed, instead, is that providers need to put in place a policy to respect EU copyright law in particular to identify and respect, including through state of the art technologies, whether rightsholders have made the "contract-out" and reserved their copyright or database sui generis right. Additionally, providers need to document and make publicly available a sufficiently detailed summary of the use of training data protected under copyright law. This would render them subject to monitoring and periodical assessment by the designated authority if the generation of content is in breach of, *inter alia*, copyright rules (EC, 2021). However, in recitals of the final version of the AI Act it is explained that this summary should not be technically detailed but comprehensive at a general level, while taking into due account the need to protect trade secrets and confidential business information (Council, 2024).

It seems that the text and mining exception is currenty the only exeption the AI industry can rely on, and while ignoring the criticism, there is nothing the EUintends to change soon.

Regarding the trademark, design and other IP infringements while training an AI system, the EP sees no concerns at this moment.

There is no provision that would provide guidance on the legal treatment of IPR infringements where the AI does not generate illegal content, but rather influences a consumer to, for example, buy a fake product or is otherwise misused in criminal activities. There are no obligations to develop an AI system whose application would be solid proof of any possible illegitimate use. Rightly so, because the AI systems are, as a rule, "tools, which are neither good or bad in themselves. Rather, it is the use of these technologies that determines whether they are beneficial or harmful" (EUIPO, 2022). An AI system that is designed to find counterfeits on various online marketplaces can have a very practical and legitimate application if it is deployed by authorities and trademark holders to track infringers for the purpose of initiating infringement procedures. But it can also be deployed by consumers to find places where cheap knock offs are sold, in which case its application makes the trademark infringement easier. In such case, a tool can be used for IPR infringement and therefore poses a risk of adverse impact on fundamental rights, since IP rights are fundamental rights (although there is some criticism around it, see Zemer, 2020). Whether it should therefore be considered high-risk is another question that arises. The study undertaken by EUIPO shows through several invented but realistic scenarios 20 examples how AI can be used both as a tool for the production and sale of copyright or design infringing goods or digital content, as well as by the rightsholders themselves in pursuing their legitimate interests. This is depicted as a "double-edged sword" metaphor" (EUIPO, 2022). So, if for example natural language processing tools can be employed to produce deepfake music, video and generative design based on tools which are used for the creation of precisely optimized and customized design solutions, it can be used in the manufacture of infringing copies; AI in 3D printing can facilitate creation of infringing goods and AI in robotics can be employed as a means of optimizing mass production of fakes; AI in computer vision can help to identify and replicate the unique colours and shapes used by originators to infringe the products – one could also argue that this makes them a high-risk AI system under the AI Act. It remains to be seen how the AI Act, once enacted, will be implemented in this respect.

One should also think about a possible scenario where an AI system is created solely for the purpose of infringing IPR rights and what happens in such case, where there is no other application possible but one that is infringing IP rights, which are fundamental rights. It would contradict the basic objectives of the AI Act, which is to develop a single market for a lawful, safe and trustworthy AI applications to allow application of such an AI system. However, due to the risk-based regulatory approach that was taken in the AI Act, there are no specific provisions that could be applied to automatically prohibit the application of such an AI system. It would therefore probably be treated as any other high-risk AI system.

On the other hand, one should also consider a case of an AI in retail that would suggest a product that infringes a registered trademark or is a counterfeit. Such AI systems already exist and are widely used: the Amazon Echo and Google Home devices; eBay's ShopBot or alike (Curtis and Platts, 2017). If a consumer asks the AI system to find a product, provided the parameters are set to find the product based on certain criteria such as past purchasing decisions, price, availability, delivery time and alike, it may happen that the AI suggests an infringing product and the consumer buys it, thereby committing IP infringement. An AI system that would automatically order products, would even make the final decision of the purchase itself and would thereby be the one committing the infringement. But to declare such AI systems high-risk just because in some situations unintentional IPR infringement may be involved would be far-fetched. Nevertheless, the above may be very appealing for the IP holders if the AI Act would oblige developers to include safeguards for AI systems and teach them how to recognize and avoid buying a counterfeit. In fact, if an AI would be employed to look for and order lifestyle medicines, it would not only be in the interest of the patent owner to prevent the AI system from suggesting a counterfeit product, but also in the interest of the public at large due to possible death or danger to health such counterfeit medicines pose.

But even if those safeguards are included, AI can fail to do what it is designed to do due to undesired learned behaviour and, as a result, infringe upon someone's intellectual property. This situation does not seem to amount to a "serious incident" regulated by the AI Act since the EP's proposal, under which a breach of fundamental rights protected under Union law would be also considered a serious incident, was not accepted in the final version of the AI Act that will be adopted.

Another question, one which could be asked in relation to any of the above-mentioned scenarios in which the application of an AI system leads to an IPR infringement, is that of liability. Here we should first consider what the general EU rules for liability in case of IPR infringements are. Directive (2004/48/EC) on the enforcement of intellectual property rights (Enforcement Directive or IPRED) imposes certain obligations on EU Member States when it comes to the enforcement of intellectual property rights in case of infringement. There are measures, procedures and remedies available for the IPR owner in civil procedures that are primarily directed against the infringer. The application of these measures, in principle, does not depend on whether the infringer knowingly, or with reasonable grounds to know, engaged in an infringing activity. However, damages have to be awarded under national law only in such cases, though many EU countries provide for more extensive protection and damages awarded to intermediaries regardless of whether the infringer knew he was committing an infringement or not. Further, there have to be measures in place in the national law to provide for the possibility of issuing injunctions against intermediaries. Intermediaries do not engage in a direct infringement, but their services are used by an infringer. Those services may operate in the physical world (for example wholesalers, operator of a physical marketplace and alike) or online (such as online marketplace, and in line with this, AI systems also). National law may provide for other measures, including awarding damages, to those intermediaries which would amount to the so called "secondary liability" (also, Peguera, 2020).

But the notion of secondary liability is limited when it comes to internet intermediaries. The E-Commerce Directive, and now the Digital Service Act (DSA) that replaced it regarding the subject-matter at issue, provide for the so-called "safe harbor" for online intermediaries. Online intermediaries are excluded from any liability regarding the infringing content when certain conditions are met. The new Digital Service Act clearly states that the exemptions from liability apply when the provider of intermediary services concerned cannot be held liable in relation to illegal content provided by the recipients of the service, but do not apply where, instead of confining itself to providing the services neutrally by a merely technical and automatic processing of the information provided by the recipient of the service, the provider of intermediary services plays an active role of such a kind as to give it knowledge of, or control over, that information. Those exemptions should accordingly not be available in respect of liability relating to information provided not by the recipient of the service but by the provider of the intermediary service itself, including where the information has been developed under the editorial responsibility of that provider. Furthermore, the DSA sets a due diligence obligation for algorithmic decision making by online platforms.

When it comes to AI systems one also has to take into account the aforementioned AI Liability Directive, as proposed. That directive specifically states that it does not affect the rules set by the Digital Services Act (DSA).

As we have seen, the EP does not think legal personality should be granted to AI systems and this is something most people will agree with. In the same vein in which an AI system cannot be the IPR holder, an AI system could not be the infringer of IPR, even when it generates the infringing content, or it buys a product which is a fake. So, it is either the provider or the user of the AI that could be deemed to be the infringer or secondary infringer of IP rights. This is also in line with the approach taken by the EC in the provisions set by the AI Liability Directive.

Even if this complex issue deserves a more detailed research, and it should be left to see how the case law develops, there are some hints on how the new legislation, when adopted, could be interpreted in the cases we have discussed.

Where the AI generates illegal content or buys an infringing product, the provider would be liable for the damage to the IPR owner, and the provisions of the AI Liability Directive would apply.

In cases where the AI influences the user (consumer) to buy an infringing product, secondary liability of the AI provider could be claimed. The provider is the intermediary in such cases and might have secondary liability under the national law. The DSA could probably not be evoked since the AI being the internet intermediary is not neutral in this case and furthermore, the provider did not undertake due diligence obligations for algorithmic decision making; the provider should have introduced safeguards that would prevent AI from suggesting or buying counterfeits. If under the national law, damages can be claimed in cases of secondary liability, the provisions of the AI Liability Directive would apply accordingly.

This would be also true when the AI system is created solely for the purpose of infringing IP rights, since providing such technology would also lead to the provider being considered an intermediary. However, in cases where legitimate AI systems are used for illicit purposes, there does not seem to be any liability of the AI provider unless the courts take such an excessive interpretation of the notion of due diligence obligation from the DSA.

2.4 Changing the Standards of Intellectual Property Protection Due to the Applications of AI

There are many well-established standards in the current intellectual property legislative framework which might be affected by the application of the AI system. These standards have been set considering certain abilities or behavior of human beings. However, they might be questionable if the use or decision-making in relation to the objects of IP rights is not by humans, but by AI instead.

In patent law, one of the criteria for patentability is the so called "inventive step". A patent is granted only for inventions which are non-obvious. By doing so, the system assures that trivial or obvious improvements on existing inventions are not protected, but only those that represent technical advance of prior art that is worth protecting. In so far, it is important to determine for whom the invention should be or should not be obvious. The standard of "the person skilled in the art" is applied and a patent application is examined with a view of whether given the known prior art, the claimed invention would be obvious to a person skilled in the art. The person skilled in the art is a legal fiction that is interpreted by the authority deciding on the issue of patentability. For example, for the European Patent Office this person is presumed to be "a skilled practitioner in the relevant field of technology who is possessed of average knowledge and ability" and "is aware of what was common general knowledge in the art at the relevant date" (EPO, 2019 update). It has been pointed out by some authors that when examining the patentability of the AI-generated inventions, the assessment of the inventive step based on the standard of "the person skilled in the art" the way it is understood at the moment raises certain issues (European Commission Joint Research Centre, 2018).

Similar, in trademark law there is the standard of "an average consumer" and in industrial designs law that of "an informed user".

The standard of an average consumer is applied when assessing the scope of protection of earlier trademarks and therefore mostly used by authorities when deciding if rights have been infringed. A trademark is infringed if another identical/similar mark is used for identical/similar goods and services provided a likelihood of confusion (including a likelihood of association) exists on the part of the public in the territory where the earlier mark is protected. The "average consumer" is a legal concept that is used in the sense of the relevant public for that purpose. The "average consumer" is deemed to be reasonably well informed and reasonably observant and circumspect, taking into account that the relevant public's degree of attention is likely to vary according to the category of goods or services in question (EUIPO, 2023). It has been argued that AI applications have important implications for who is considered to be the "average consumer" (Lee and Platts, 2020). This is because the average consumer is assumed to be human and to have certain human traits and psychological characteristics, such as suffering from imperfect recollection, appreciating a mark as a whole, and concentrating on the dominant and distinctive elements of a mark. By contrast, AI technologies are likely to have perfect recollection, and due to the ability to process, analyse and interpret high volumes of data, may in some circumstances be able to make fine distinctions between marks (Batty, 2021).

In design law, one of the requirements for protection is that a design has individual character. A design will be considered to have individual character if the overall impression it produces on the informed user differs from the overall impression produced on such a user by any prior design. The "informed user" is again a fictitious person who routinely uses the categories of products in which the contested design is incorporated and is aware of the existing design corpus. This concept lies somewhere between that of the average consumer applicable in trademark matters, who may not have any specific knowledge, and the sectorial expert, who has detailed technical expertise (EUPIO, 2023) comparable with "the person skilled in the art" from patent law. Usually when a design is created with the application of an AI system, the AI is learning from the already existing designs and is exposed to large quantities of images and then anayses in detail the concept of design, which does not fit the existing definition of the "informed user" who is only aware of the existing design corpus.

While these, and maybe even additional aspects of intellectual property law, might in the future need adaptation to accommodate the application of AI, it is not something we should expect in the near future. Rather, it will change the way the authorities interpret these standards. For example, the growing uptake of AI-assisted shopping may change the way in which courts assess the likelihood of confusion in certain online shopping situations (where AI technology is used to purchase products on behalf of consumers, there may be less likelihood of confusion), there may be more emphasis given to pre-sale and post-sale confusion and the construct of the average consumer may also be subtly adapted (Batty, 2021).

3   Conclusion

Some aspects that the EU will regulate in its forthcoming regulatory framework for AI were analysed. This analysiys shows that the risk-based approach taken by the EC resulted in making the AI Act significantly less comprehensive. Some of the key amendments the EP has proposed regarding certain requirements that would apply to all AI systems would had made the act more comprehensive. But as we have already seen with the proposal for the AI Liability Directive, the AI Act will not be the only piece of legislation concerning AI in the EU, but perhaps, just the beginning. In intellectual property field we might see some legislative initiative to address the problem of ownership and authorship of IP rights in the AI-generated works, which should, as the EP suggests, only be assigned to natural or legal persons that created the work lawfully. Horizontal rules on AI systems as set in the AI Act could help to identify what is created lawfully, so that the protection is afforded only to those works generated by AI systems in compliance with the AI Act. The AI Act will also be helpful for distinguishing AI-generated inventions and works. It does not seem any additional legislation is going to be proposed to address the issue of protecting the technology underlying an AI system by IP titles. Furthermore, the

AI Act might help the authorities when applying the public policy and morality exclusion on patentability. Concerns regarding the protection of trade secrets underlying a high-risk AI system which might be revealed to the notified national body under the AI Act, have been addressed by introducing some safeguards that strengthen the protection of such trade secrets. On the issue of protecting IPR when training an AI system, the EU co-legislators seem to believe the EU existing rules on text and data mining exception to copyright and database *sui generis* right adequately addresses the problem, while other IPR titles do not raise any concerns at this moment. The proposal of the EP to introduce an obligation to train, and, where applicable, design and develop the foundation model and generative AI to ensure safeguards against the generation of content in breach of EU law, including those on IPR protection has not been accepted in the final wording of the AI Act. On the issue of IPR infringement resulting from operating an AI system that influences an IPR infringement (for example and AI in retail that suggests a counterfeit) or is simply misused in criminal activity, it remains to be seen whether such AI systems might be regarded as high-risk systems under the AI Act. According to the final version of the AI Act, the procedures initiated in cases of serious incidents would not be initiated when an AI system is infringing IP rights. In the context of AI Liability Directive, the provider of the AI seems to be liable for the damage to the IPR owner resulting from AI-generated illegal content, while the question of secondary liability might arise in cases where the AI influences the user to buy an infringing product, as well in cases where an AI system is created solely for the purpose of infringing IP rights. In these cases the Digital Service Act applies, but the provider of AI does not seem to be entitled to claim the safe harbour exemption from liability since the service is not provided neutrally by a merely technical and automatic processing of information and the provider would have introduced safeguards that would prevent AI to be used for infringement. However, in cases where legitimate AI systems which have undertaken due diligence obligation for algorithmic decision-making are being used for illicit purposes, the provider of the AI should not be liable for IP infringement. Some well-established standards in the current intellectual property legislation (for example the "average consumer" as a legal standard in trademark law) might in future need to be adapted to accommodate the application of AI. This is not something we should expect in the near future, however, the way the authorities interpret these standards may change, as AI technologies change the way the market operates.

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