REASSESSING PATENT SYSTEMS IN THE AGE OF GENERATIVE AI

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Introduction

Artificial Intelligence (**"AI"**) has emerged in the field of creativity and innovation and it is anticipated to become a fundamental aspect of everyday life soon. Innovative AI technologies offer promising possibilities for advancements in the creative arts, entertainment sectors, and life-improving creations. Nevertheless, there are social, economic, and ethical implications that must be considered, and policy must adapt accordingly.

The connection between Intellectual Property (**"IP"**) and new technology has always been interdependent, requiring policy to adjust to advancements in technology and cultural shifts. AI has the ability to disrupt the IP system, leading to important questions about who created and owns the technology and how Intellectual Property rights are enforced. Policy makers need to prioritize the development of AI technologies to protect Intellectual Property Rights and address negative consequences on society, the economy, and ethics.[203]

Over time, the patent system has developed and grown, broadening the scope of what can be patented and adapting its standards to keep up with technological advancements. Yet, the patent system faces new challenges due to the rise of modern technologies. Specifically, advancements like AI have introduced fresh methods of creation that rely on minimal human participation. This has brought up several significant concerns, with the main inquiry being if the patent system can still effectively encourage and recognize innovation. AI technology development needs immediate changes to the patent system to prevent negative effects of unequal protection given to AI outputs, which could lead to damaging social, economic, and ethical outcomes.

Keywords: Intellectual Property, Patents, Artificial Intelligence, Generative AI

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[203] Center for the Fourth Industrial Revolution, Artificial Intelligence Collides with Patent Law

The Question of Inventorship and Ownership?

AI is typically used as a tool to help inventors during the invention process, or it is integrated as a component within an invention. AI is not fundamentally different from other inventions aided by computers in these aspects.[204] But it is now evident that AI can independently create inventions, and there have been many instances where individuals have applied for patent protection listing an AI program as the creator. [205]

Issue

When it comes to inventions created by AI without human involvement, should the law allow or mandate that the AI be credited as the inventor, or should a human be credited instead?

Should the law specify how to determine a human inventor, or leave it to private agreements and potential legal review?

Who should be listed as the patent owner for AI-related patents?

Should new laws be made to determine ownership of AI inventions generated autonomously, or should ownership be based on inventorship and private agreements?

Should inventions created autonomously by AI be ineligible for patent protection under the law?

AI and Human Innovation: What is the Mechanism to differentiate between the two?

Due to the fast advancement of AI technologies and its enhanced computing capabilities, the invention process has significantly changed. As Artificial Intelligence improves in its ability to organize data, identify patterns, and make forecasts, it is being used more and more in different industries focused on innovation. AI advancements have progressed to the point where it can generate results with minimal human intervention. If a human creator generated similar results, they could qualify for patent safeguarding. [206]

This brings up a significant issue of whether, based on the current patent law system, an AI system can be considered the inventor. The patent system is focused on a 'human inventor' and is based on the rationale and fundamental principles of **patentability standards**. Therefore, the main purpose of patent law is utilitarian, meaning it seeks to encourage and compensate inventors for their innovative work.[207]

What connotes an Invention under the law?

Patents are granted to innovations that demonstrate human creativity, rather than being basic discoveries or slight modifications of existing knowledge. The idea of an invention involves a unique intellectual creation by the inventor, specifically the creative thought process taking place in their mind.[208] Additionally, the distinction between what can be patented and what is simply a continuation of current knowledge is based on human abilities, specifically by assessing what a theoretical expert in the field could have easily discovered and the extra touch of creativity added by the inventor.[209]

These criteria focus on the mental and innovative processes of human inventors, which limits the role of non-human inventors. In particular, the examination of issues concerning inventorship focuses on a human inventor. In determining the origin and creator of an invention, courts typically consider the inventor's conceptualization of the invention.

In the UK, the Patents Act 1977 emphasizes granting patents to the inventor(s) and ensuring they are recognized in any patent or application. The Patents Act does not offer

[204] WIPO Secretariat, WIPO Conversation on Intellectual Property (IP) and Artificial Intelligence (AI) Second Session, draft issues paper on intellectual property policy and artificial intelligence
[205] Supra 2

[206] Robert L Harmon, Harmon on Patents. Black-Letter Law and Commentary, BNA Books, 2007).
[207] PLG Research [1994] FSR 116, 137
[208] Robert L Harmon, Harmon on Patents. Black-Letter Law and Commentary, BNA Books, 2007.
[209] Lisa Vertisky, 'Thinking Machines and Patent Law' in Barfield et al (eds.), Research Handbook on the Law of Artificial Intelligence Edward Elgar, 2018, 496

much help in identifying the inventor, as it only specifies in Section 7(3) that the inventor is the person who came up with the invention. The UK courts[210] clarified that the inventor is the individual who originally conceived the innovative idea. Similarly in India, The Patents Act, 1970, does explicitly define the first inventor in Section 2 definition and interpretation clause instead it states who shall not constitute to be a true and first inventor.[211][212]

What will be considered as an Inventive step?

The Yeda court[213] stressed that simply adding to the claims is not enough, as the claims could involve non-patentable aspects from previous knowledge. This means that an individual will be recognized as the inventor if they can show they have played a role in the creation of the 'inventive concept'.

Some contributions that involve solving a specific problem are typically seen as innovative in court, leading to the person being recognized as a (co)inventor. However, if someone only added an 'unnecessary detail' to the invention, or their contribution was related to management, administration, or finance, then it will not be deemed as inventive.

Hence, the key factor in determining inventorship is the type of contribution made to the creation of the invention, which needs to be original or clever. Thus, with that calculation AI technologies are automatically ruled out as potential inventors. Even though AI can play a key role in determining the patentability and success of an invention in addressing a technical issue, it cannot be seen as the creator of the invention due to its current lack of cognitive abilities. AI should be viewed as a vital tool in the creation of the invention. For instance, a survey conducted by Github stated that almost 92% of U.S. based developers were already using AI coding tools. So with this data and a code being a substance of copyright can

it be presumed that AI is the owner of the copyright?

Presumption is that the current patent law can handle AI-generated inventions by giving credit to the person who guided the inventive process. There is no need to update patent law to designate an AI system as the inventor. Potential alterations to the existing legal framework may disrupt the reasoning and key principles of the patent system as mentioned earlier. If technology were to advance to the point where no human intervention was necessary (known as **'strong AI'**), then the methods of safeguarding the results of this technology would have to be reevaluated.[214]

Patentability Standard

For a patent to be granted, the invention must either show innovation or be not obvious. The criteria used to evaluate non-obviousness is whether a person with expertise in the specific field of the invention would find it obvious. The questions that are posed while evaluating the patentability standards are:

(i) What does the standard refer to in terms of AI inventions' art?

(ii) When an invention is created independently by an AI application, for evaluation should we stick to the standard of a skilled person in the field or should we think about using an algorithm trained with data from that specific field instead?[215]

(iii) How will the presence of an AI replacing a skilled person affect the identification of prior art?

(iv) Would AI-generated content meet the criteria to be considered as prior art?[216]

The current tests of obviousness, used by entities like the European Patent Office ("EPO")[217]

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[210] Supra 7

[211] Supra 7

[212] Supra 7

[213] Supra 7

[214] Noam Shemtov, A Study on Inventorship in Inventions Involving AI Activity, EPO, 2019

[215] Lisa Vertisky, 'Thinking Machines and Patent Law' in Barfield et al (eds.), Research Handbook on the Law of Artificial Intelligence Edward Elgar, 2018, 496

[216] Rhone-Poulenc Rorer International Holdings v Yeda Research and Development Co., 2007, UKHL 42, [20]

[217] E.g. The current UK obviousness analysis derives from Windsurfing v Tabur Marine [1985] R.P.C. 59 Ca; it was restated in Pozzoli [2007] EWCA

based on evaluating human capabilities such as motivation, ability to analyze limited options, predictability, and expectation of success. These principles may become less important in the inventive process when AI is involved. Although different regions have created specific methods for evaluating obviousness, the main inquiry remains whether the invention would have been apparent to someone with expertise in the field. The evaluation of non-obviousness relies on differentiating the mental abilities and knowledge of the theoretical person skilled in the field from the mental actions of the inventor.

Nevertheless, when it comes to inventions created by AI, the primary result that has sparked the invention is generated by AI. This factor is crucial because AI broadens the scope of discoveries possible with minimal effort, potentially leading to innovations through rapid trial and error. Without AI assistance, the results may be unexpected to those skilled in the field, highlighting the need to reassess human capabilities compared to AI capabilities. This establishes a low level of obviousness that could result in most AI-generated inventions being considered non-obvious to a skilled individual relying solely on their general knowledge and cognitive abilities.[218]

This leads us to a crucial question in analyzing the obviousness of AI-generated inventions: how do we establish the expertise of the person in the field and should AI be included in the current criteria?

According to the EPO Guidelines[219], the average person skilled in the art is assumed to have the resources and ability for usual work and experimentation within their field of technology. The issue is whether a specific AI technology has become a common tool for regular work in that field. If not, using an AI technology to create inventions may make all inventions non-obvious to the person skilled in the art without

the use of a similar AI tool. However, if AI use is common in the field, how should we define the person skilled in the art for AI-generated inventions, specifically who should be considered part of the skilled team? Another important issue involves determining the appropriate area of the invention and the extent of the previous knowledge. Determination of obviousness is based on imagining what would have been clear to a skilled person in the relevant field at the priority date of the patent in question.[220]

Hence, accurately defining the 'art' of the invention is crucial to identify the 'person skilled in the art' and their general knowledge. It is important to determine the 'field of endeavor' of the inventors without overly broad or narrow definitions. Clear definition of the relevant art assists in assessing prior art, particularly in determining obviousness by considering the perspective of the person skilled in the art and their limited scope of knowledge.[221]

In a case in the UK[222][223], the invention was about an expandable garden hose. One of the prior art references mentioned in the obviousness attack involved an oxygen hose for air crew in an aircraft. The court determined that a garden water hose designer, upon reviewing the aircraft hose reference, would recognize it as irrelevant to their work. The court also emphasized the significant differences in the environments and considerations between the two types of hoses. If the idea was used on a garden hose, they may not be sure it would work. Having knowledge of various prior art does not guarantee understanding or combining different technological areas. Simply being aware of previous inventions is different from recognizing how they can solve current problems.

Nevertheless, AI systems do not face the same limitations in terms of particular technological domains. In contrast, AI technologies have the

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Civ 588 CA. The EPO applies the problem-solution approach (see EPO, Guidelines for Examination in the European Patent Office (November 2019) GVII at 5.1-5.4).
[218]Supra 7
[219]Supra 7

[220]Supra 7
[221]Supra 7
[222]Supra 7
[223] Blue Gentian LLC v Tristar Products (UK) Ltd [2013] EWHC 4098 (Pat).

ability to greatly broaden the scope of existing knowledge by exploring, understanding, and utilizing ideas from completely different areas. Hence, a key inquiry is the extent of the prior art's scope for analyzing the obviousness of AI-generated inventions. Predictability and anticipation of success are currently significant factors in determining obviousness. This is particularly accurate regarding the pharmaceutical and biotechnology sectors, known for their high levels of uncertainty. Therefore, it is crucial to examine how advancements in AI technology with powerful processing abilities impact uncertainty from the perspective of an expert in the field.[224]

In simpler terms, do the advancements in AI technology make most inventions so predictable that they would be eligible for patent protection under current patentability standards? The aforementioned issues need immediate resolutions. The way we currently assess obviousness needs to adapt to the advancements in AI technologies and how they affect the inventive process. Keeping the obviousness standard unchanged would set a low threshold for patents, resulting in more patents and worsening the issue of 'patent thickets' in several industries. One of the main goals of the patent system is to incentivize individuals and companies to invest time, money, and effort into developing new concepts that could benefit society. Therefore, the patent system is a crucial aspect of innovation policy in a broader sense. Does the emergence of AI-generated inventions created independently by AI applications necessitate a reexamination of the importance of patent incentives for such inventions?[225]

Considering the points mentioned earlier, the decision on whether AI outputs should be eligible for patent protection hinges on whether it aligns with the purpose of the patent system - incentivizing and rewarding AI-generated inventions. When crafting new policies, it is crucial to strike a balance between the needs of private entities and society as a whole. The patenting of AI technologies, along with the control of **"Big Data"** used to train them, by a few market players could restrict access to innovation and concentrate profits in their hands. Policymakers in patent and competition law should address these risks to prevent stifling innovation and competition. Considering a wide view of fair distribution of benefits among all participants in the innovation process is crucial to motivating them to keep investing in financial, physical, and human resources.[226]

In conclusion, although current patent laws can handle current technology challenges, future advancements in AI may necessitate updated regulations. If technology advances to the point where it can match human intelligence (referred to as **"strong AI"**), new strategies will be needed to deal with the challenges it will bring, such as developing new ways to safeguard the outcomes produced by this sophisticated technology.[227]

[224] Clark Sullivan and Michael Kline, Introduction to Patentability in Drug Development (Future Science Ltd, 2016) 90 ('it is not possible to predict pharmaceutical activity ab initio').

[225] Brenda M Simon, 'The Implications of Technological Advancement for Obviousness' (2013) 19 Mich. Telecomm. & Tech. L. Rev., 105

[226] Supra 7

[227] Erica Fraser, 'Computers as Inventors – Legal and Policy Implications of Artificial Intelligence on Patent Law' (2016) 13(3) SCRIPTed 325