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IP Laws, Innovation and the AI based Patents: US and EU

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ABSTRACT

The aim of this paper is to explore and connect the dots by an up-to-date analysis of Artificial intelligence, innovation, its dissemination, and AI based IPs. Advanced mechanics innovation & the expanding refinement of Artificial Intelligence (hereinafter referred to as AI) with critical development possibilities taking into consideration its potential to modify existing economic and social aspects of everyday life. This paper delves into the domain of comparative analysis mainly in the US and Europe. In furtherance of this, discussing the role of WIPO (World intellectual property organisation) acting as a catalyst in the evolution of AI based IP's. Also, focusing as to how the governments plays a major role in supporting AI innovations, may it be through judicial decisions, basically implicit, de-facto requirements. The essence behind providing the right of patent was to exclude any third-party from using the proprietors technology without their permission and in consideration get royalties for their hard work. In light of this, the highest number of filings vis-a-vis AI's have taken place in US, China, Japan and Republic of Korea. Earlier the electronic and automotive industries were considered to be the largest patent filers, however, lately a drastic increase has been observed in the domain of Internet of things and medical technology. Trade secrets have always had their way as a tool for proper innovation. Finally, discussing inevitability of technological singularity and whether AI inventions or innovations are worthy of being IP protected.

Keywords: *Artificial intelligence, technological singularity, innovation, patent.*

I. APPROACHING ARTIFICIAL INTELLIGENCE: AN OVERVIEW

Artificial Intelligence, the term was officially coined by Professor John McCarthy in 1955.[2] World intellectual property organization ("WIPO") defines intellectual property as "a creation of mind". An AI functions on algorithms that use 'deep neural network' to learn certain salient characteristics, for example such technique was used in Pablo Picasso's artistic style by

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[2]Mizuki Hashiguchi, 'The Global Artificial Intelligence Revolution Challenges Patent Eligibility Laws' (2017) 13 J Bus & Tech L 1

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computer scientists in Germany. "A 'deep neural network' is a multiple-layered network of inter-connected processors modelled after neurons of the human brain."[3] Artificial intelligence("AI") is the ability of the machines to respond in a way which is indistinguishable from human responses, this test is known as the 'Turing test'.[4] Brooking institutions recent paper argues that artificial intelligence must have three main components/qualities i.e. intentionality, intelligence and adaptability.[5] There are two distinct forms of artificial intelligence, namely Weak AI's and Strong AI's, where the stronger one is a jack of all traits and the weak AI's are narrowly oriented specific.[6] For instance Siri, Alexa and etc. would come under the latter. Artificial intelligence eliminates fatigue by performing tedious tasks in high volumes. By analysing more in-depth data, it helps ignore human weakness. AIs are highly adaptive in nature and reacts to informative changes, hence, evolving with each new challenge. Now, whether an artificial intelligence machine can be patented is a multifaceted issue.

> *The real question is when will we draft an artificial intelligence Bill of Rights? What will that consist of? And who will get to decide that? - GREY SCOTT*

'Technological singularity' has assisted AI's in playing a crucial role for the benefit of humans to achieve various goals. For instance one can already see AI bringing concrete improvements in research, work or operations in businesses.[7] Prima facie, the question whether there is an effective legal system vis-a-vis an AI is to be enquired upon. And if the answer, is in negative then what practices are we to follow for it to evolve or develop as achieving technological singularity is inevitable.

II. INTELLECTUAL PROPERTY VIS-A-VIS PATENTS

Patent laws are the guardians of innovation which not only encourages the holder by protecting the invention and ousting others, but also help the patent holder attain economic benefit out of the intellectual hard work. Therefore, "it is designed to encourage innovation in our society".[8]

[3]Hashiguchi (n 3) 3
[4] Rohan Seth, 'In the field of Intellectual property rights '(*IP and Patents*, 10 September 2020) <https://www.thepeninsula.org.in/2020/09/10/contemporary-and-upcoming-issues-in-the-field-of-intellectual-property-rights/> accused on 17 December 2020
[5]Darrell M. West and John R. Allen, 'Artificial Intelligence is transforming the world' (BROOKINGS UNIVERSITY, 24 April 2018), <https://www.brookings.edu/research/how-artificial-intelligence-is-transforming-the-world/> accessed on 14 December 2020
[6]George S K, 'Can Artificial Intelligence Machines Be Patented Or Sued' (2019) 6 Ct Uncourt 41
[7]Jiirgen Schmidhuber,Deep Learningin NeuralNetworks: An Overview, (61 NEURAL NETWORKS July 22, 2016) <https://erc. europa.eu/projects-and-results/erc-stories/self-learning-ai-emulates-human-brain> accessed on 14 December 2020
[8]Anna B. Laakmann, An Explicit PolicyLeverfor PatentScope, 19 MICH. TELECOMM. & TECH. L. REv. 43,44 (2012).

IP laws around the globe lays down a few prerequisites that a patent applicant needs to abide by in order to obtain a patent. This is known as 'patent eligibility' requirement.

In legal terms the claim must be:

1. Novel and non-obvious,
2. This novelty and non-obviousness must be viewed from the lens of the person skilled in that field apropos of the patent claimed in question.
3. Applications applied for should be sufficiently clear and detailed in nature.

The above-mentioned are a few general criteria's for fulfilling the conditions to obtain a patent in the worldwide jurisdictions. At present laws have not specifically been framed with the AI-based IP's, however, it is the implicit de-facto requirements that are fulfilled by the courts or tribunal to be found patent eligible. In light of this WIPO is yet to come with laws pertaining to AI based IP's.

> "The director-general of WIPO Mr Francis Gurry said: "*Artificial intelligence is set to radically alter the way in which we work and live, with great potential to help us solve common global challenges, but it is also prompting policy questions and challenges."*[9] On December 13, 2019 WIPO also published 'Draft Issues Paper on Intellectual Property Policy and Artificial Intelligence 'with an intent to invite feedback/opinion on the most pressing issues IP policymakers will face in the near future. One of the most crucial questions where jurisdictions conflict is whether AI can be an inventor/owner of an IP."[10]

III. AI AND PATENTS

Neither do IP laws expressly define AI based IP's nor do they bar them from being applicable. This leaves a room for its jurisprudence to evolve and it can be attained through the creative judicial interpretation of broad statutory definitions.

(A) USA

Section 101 of the US patents act provides for the patent eligibility prerequisites. 35 USC § 101 - "Whoever invents or discovers any new and useful process, machine, manufacture, or

[9]PR/2019/843, WIPO Begins Public Consultation Process on Artificial Intelligence and Intellectual Property Policy, (World Intellectual Property Organization (WIPO), 13 December 2019) Geneva; <https://www.wipo.int/pressroom/en/articles/2019/article_0017.html> accessed on 16 December 2020

[10]Rohan Seth, 'In the field of Intellectual property rights '(*IP and Patents*, 10 September 2020) <https://www.thepeninsula.org.in/2020/09/10/contemporary-and-upcoming-issues-in-the-field-of-intellectual-property-rights/> accused on 17 December 2020

composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title."[11] The procedure provides for 'claims' that are contained in patent applications. The claims are the ones responsible for delving into the intricacies and vital component of the invention, and this is done in furtherance to set boundaries vis-a-vis the patents legal protection. Inventions in the domain of AI comprise of procedures that implement 'mental steps' and mechanisms helping to further those mental steps automatically.[12]'Implementing mental steps' has not been defined nor expressly debarred. In the case of *Gottschalk v. Benson*[13] the Supreme Court of the United States held that "mental processes, abstract intellectual concepts, and natural phenomena cannot be protected by a patent."[14] The US judiciary evaluates patent eligibility requirement with respect to mental acts and human activities in two steps;

By determining whether:

1. The invention comprises of an 'abstract idea',
2. The inventiveness of a patent claim.

Therefore, if the court is of the notion that an invention does not comprise of an abstract idea, it is patent eligible. However, if vice versa is found then step two would be examined. Inventiveness in the US jurisdiction is determined by analysing the contribution of that patent and whether that treatment would be able to transform an abstract idea into an invention. Thus, if the courts decide for the patent to be inventive, then it is patent eligible. However, it is to be noted that the term 'abstract idea' has not been defined by the Supreme Court yet, due to which the lower courts have given different interpretations to the aforementioned term.

1. Mitigating settlement risks

In the case of *Alice Corporation Pty. Ltd. v. CLS Bank International*[15], the invention was regarding a computerised method to mitigate financial settlement risks. To alleviate this risk, a computer was used as an intermediary to keep a check on the account balance of parties to a case. Such an invention in the Alice case was considered to be an abstract idea by the Supreme Court. The court stated that an intermediated settlement have been quite prevalent in the economic commercial practice of the US system. Further, while considering step two of inventiveness the court opined that computer performed a purely conventional

[11]https://www.uspto.gov/sites/default/files/101_step1_refresher.pdf
[12]Larry Hauser, ArtificialIntelligence, INTERNET ENCYCLOPEDIA OF PHILOSOPHY, 15 September 2017) <http://www.iep.utm. edu/art-inte/> accessed on 14 December 2020
[13]409 U.S. 63, 67 (1972)
[14]Hashiguchi (n 3) 10
[15]Alice Corp. Pty. v. CLS Bank Int'l., 134 S. Ct. 2347, 2357 (2014).

task, hence, failed to transform the abstract idea into a patent eligible invention. Pertaining to this, the court noted that neither the invention per se improved the functioning of the computer nor any improvements in the technical field was observed. Hence, the computerised process in the Alice case was not patent eligible.

2. Automatic graphics in a computer

In the case of *McRO, Inc. v. Bandai Namco Games America Inc.*[16], the process of adjusting computer graphics automatically was up for consideration by the court. The patent at issue was able to automatically synchronise the facial expressions and lips of an animated character as per the dialogues. The major function of the invention was to time the script from one timeframe to another. This term is known as the 'morph target'. In light of this, Federal circuit concluded that the patent at issue helped in the process of accurately adjusting the displacement and opined it to be patent eligible based on the fact that it was not an abstract idea. The court further observed that the claim was appropriately defined where the morph weight dealt with the functioning, pertaining to the time sequence of sound uttered by the animated character. Also, it helped to transform information into a certain format that was necessary to animate the character. The federal court emphasised on the term 'Specific implementation' to be a prerequisite for any patent claim.

Two more guidelines were laid down:

- To check whether the implementation was not a conventional method, that any person skilled in the art would commonly use.
- Even though the computer was used as an intermediary to further the cause of animation process, the use of the computer alone would not be able to produce such a process.

In the aforementioned case, the federal circuit opined "processes that automate tasks that humans are capable of performing are patent-eligible if properly claimed".[17]

In furtherance to this, it clearly shows the stance of the US courts to accept the AI revolution with open arms. Cases such as Enfish, LLC v. Microsoft Corporation and Fitbit Inc. v. Aliphcom have on the similar lines followed the criteria of the patent eligibility.

3. Analysing the US case law

[16]McRO, Inc. v. Bandai Namco Games Am. Inc., 837 F.3d 1299, 1303 (Fed. Cir. 2016).
[17]ibid 1307-8

The aforementioned cases illustrate the specificity aspect as well as the technical contribution, to establish patent eligibility. The main reason behind the focus upon technical and specificity improvement is to prevent pre-emption. Hence, exception under 35 USC § 101 is not tangibility, but pre-emption.[18] Finally, Patent claims fulfilling all conditions necessary, the courts have reverted with a positive attitude.

(B) EPC

Article 52 of European patent convention ("EPC") discusses the subject matter for patent intelligibility.[19] From all accounts, exception under section 52 states that if a patent claim is concerning an AI and a court determines that such an invention consists of processes that include mental act per se, the subject matter will not be patent eligible. Hence, the patent will not be protected in the EU jurisdiction.

1. Abstracting documents automatically

The EPO's technical board of appeal(the "Board") held that automatically summarising documents to be excluded under section 52 from being patentable. As the court observed that it comprised of "rules and methods for performing mental acts" per se,[20] which are expressly excluded under article 52(2)(c) of the EPC. Patent claim at issue was comprising merely of innovative rules that enabled the system to abstract the document automatically as per the board. The applicant, however, claimed that the invention eliminated the burden of processed voluminous data. However, the actual problem laid in the retrieval on the basis of textual properties and innovative routes for document abstracting, which could not be considered 'technical' as such.

The above decision took place in 1988. The board, however, while dealing with the similar patent claim in 2015, reversed its own decision and considered the invention as technical

[18]Hashiguchi (n 3) 15

[19]**Patentable Inventions :** *European patents shall be granted for any inventions, in all fields of technology, provided that they are new, involve an inventive step and are susceptible of industrial application. The following in particular shall not be regarded as inventions within the meaning of* paragraph 1:(a)discoveries, scientific theories and mathematical methods;
(b)aesthetic creations;
(c)schemes, rules and methods for performing mental acts, playing games or doing business, and programs for computers;
(d)presentations of information.
*(3)*Paragraph 2 *shall exclude the patentability of the subject-matter or activities referred to therein only to the extent to which a European patent application or European patent relates to such subject-matter or activities as such.*

[20]Decision of the European Patent Office, Technical Board of Appeal, Case T 22/85 -3.5.1, 5 October 1988), <http://www.epo.org/law-practice/case-law-appeals/pdf/t850022epl.pdf> accessed on 16 December 2020

 [ISSN 2581-5369]

per se. Where this time "The Board noted that the method performed by the smart server 'appear[ed] in a technical context'."[21]

2. Three-Dimensional receptacle

The invention under consideration was a 3-D receptacle. Here, the patent claim comprised of both excluded as well as non-excluded subject matter.

- **Excluded -** Inputting data involved performing mental acts.
- **Non-excluded -** Processing, output and display units, comprising the functioning of computer hardware.

The board perspicaciously held that when there is a conglomeration of excluded and non-excluded subject matter, the 'technical contribution' aspect of it would be taken into consideration where such a contribution must be outside the domain of excluded subject matter. Only then would it be patent eligible.

Two reasons were stated:

1. The 3-D receptacle led to the creation of a physical object. As per the board the presence of a physical entity portrays a technical attribute acceptable to be patent eligible.
2. Further, in this case the excluded portion i.e. the input units, was considered non-conventional in nature as they were specifically designed to receive cross-section of data representation. Hence, it was allowed to be patentable.

IV. CONVERGENCE AND DIVERGENCE: US AND EU

(A) Technical Character

EU focuses mainly upon the technical character of the claim, while the US courts do not pay much heed to that characteristic. The focus of US is upon whether the invention amounts to an abstract idea and whether it demonstrates inventiveness. However, the US judiciary does not oust the technical characteristics in toto. For instance, in the MCRo Inc. and Fitbit case, the claims did possess technical characteristics.

(B) Contribution Approach

The US Federal circuit in the Enfish LLC case, held that AI inventions responsible for improving traditional technology would fulfil the patent eligibility criteria. On the other hand,

[21]Decision of the European Patent Office, Technical Board of Appeal, Case T 0483/11 -3.5.01, 13 October 2015), <http://www.epo.org/law-practice/case-law-appeals/pdf/tl 10483eul.pdf> accessed on 15 December 2020

EPO board declined to follow the transformation or contribution approach in the case of T 22/85. To conclude, the patent eligibility threshold is elevated due to the contribution approach by effectively adding inventiveness criteria as well as novelty factor for evaluation.

V. CHALLENGES/IMPEDIMENTS FOR AI BASED PATENTS

Hashiguchi suggests the challenges that AI imposes from establishing patent eligibility:[22]

1. **The inexplicability problem –** The computer scientists who program AI's have difficulties in explaining why and how is the behaviour of the AI in a certain manner. The reason being is that strong AI's begin to think, comprehend and learn new things which the owner of the AI might not be aware about. Hence, the inexplicability problem of AI's**.**
2. **Transfiguration of AI –** More specialised the invention, more likely it will be patent eligible (Strong AI is better than a Weak AI).

VI. CONCLUSION

It should be kept in mind that judicial versatility must originate from the statute.[23] In other words it is with time that one will see evolution in laws, but as of now courts are the ones making the difference in this niche field. 'Technological singularity' could be achieved through the concept of 'Quantum computation' as Moore's law becoming stagnant is no more an imagination. With silicone microchips losing out on space to include transistors, the option of quantum mechanics entering the arena and doing wonders to provide a throttle to technological singularity is awaited. The limits of an AI are far beyond our imaginations. The legal systems around the globe have begun to integrate the AI revolution. If the patent claims are detailed enough to help demarcate the claim for other competitors as well as the courts or board, then it would fulfil the patent eligibility requirements. However, one must not forget the ethical aspects of AI's and whether an AI can acquire legal personality as such.

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[22]Hashiguchi (n 3) 32
[23]CLS Bank Int'l. v. Alice Corp. Pty., 717 F.3d 1269, 1335 (Fed. Cir. 2013).

 [ISSN 2581-5369]