



## A Robot in IP-The Issues and Need for Legislation

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*Received: 13<sup>th</sup> June 2020; accepted: 9<sup>th</sup> November 2020*

Advent of economy and information technology has transformed the world from manual to one touch dependence on computer-based technology and Artificial Intelligence (AI). A robot can create something without any instructions at its own free will; the question that arises here is, whether such asset created by a robot would qualify for the grant of IP protection? If it is granted, who would be qualified to own the IP protection? The questions remain unsettled. The paper elucidates the basic idea of AI, its current scenario in relation to the concept of legal entity as a juristic person in different jurisdictions followed by illustrations and circumstances of the difficulties and challenges faced by the creators of AI in the field of patent using the concept of inventorship, inventive step, non-obviousness and theoretical analysis by subject matter patentability. And finally, the legal status and a policy suggestion as a conclusion on how it would help in improving the patent laws through TRIPS. The rapid increase in creation of intangible asset is astonishing and it becomes an absolute necessity to focus on the subject of AI and define it by law as the technology advances.

**Keywords:** Robotics, Trade-Related Aspects of Intellectual Property Rights, World Intellectual Property Organization, Artificial Intelligence, Device for the Autonomous Bootstrapping of Unified Sentience, Natural Right Theory, Intellectual Property, Patent, Legal Personality, Subject Matter Eligibility, Inventorship, Artificial Persons, Electronic Personality

Artificial Intelligence (AI) is a system having ability to perform tasks which otherwise may require some effort from human interference and intelligence. A decade back it wasn't even in slightest imagination that human lives could be made simpler by the work of AI in its involvement in day to day life to communicate or work or in leisure. Emails, social networks, transport and tours, banking are the classic example of AI in our regular normal life. It is clear that AI's are not anymore, a matter of movie creation or a sci-fi, AI has come into the life and homes through automated car or a helping aid robot.<sup>1</sup> It has grown into a man's life to make living simpler and easier; few among them are business technology giants like Google, Facebook, IBM. Artificial Intelligence is nothing but a simulation or an ability of machine to possess and imitate human intelligence or similar. One such branch of AI is Robotics, where robot with intelligence of a human are made to be useful many purposes such as house, construction or even in school purposes. As the evolution of human life takes place per year or a decade, the evolution of AI takes place every minute. It is an ongoing transformation of technology and a never-ending process. Such is creation of robotics. Intellectual property is ruling the world, by granting

protection to the inventors, software creators, innovators, companies and many more. It grants an eclipse of legality of possession of protection and none can question unless it is violating the principles of law. Rapid evolution of technology has created the question of whether the robots, computer and AI can be considered as similar to human to have rights? The very first AI can be traced back to 1956 during the Dartmouth Summer Research Project on AI. But since then there has been lot of innovators and publications relating to AI.<sup>2</sup>

AI regulation has been a latest phenomenon in India, in 2017 set of 18 member task force by the India's Ministry of Commerce and Industry perceived AI as "the science and engineering of making intelligent machines, especially intelligent computer programs", with 'intelligence' being "the computational part of the ability to achieve goals in the world".<sup>3</sup> Further NITI Aayog (National Institution for Transforming India) which is a policy think tank aims to achieve the sustainable development goals in India. It defines AI as "a constellation of technologies that enable machines to act with higher levels of intelligence and emulate the human capabilities of sense, comprehen[sion] and act[ion]".<sup>4</sup>

Gartner Inc, a leading research and advisory company, has an instructive definition of AI, and

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states: “Artificial intelligence is technology that appears to emulate human performance typically by learning, coming to its own conclusions, appearing to understand complex content, engaging in natural dialogs with people, enhancing human cognitive performance... or replacing people on execution of non routine tasks.”<sup>5</sup>

AI is capable to process even unstructured data; reach conclusions and make reasonable suggestions on its own; acquire knowledge on its own from the inputs; and has the ability to make a creation, invention of its own, find a solution to a problem.<sup>6</sup> AI aids and enhances the activity of the human inventing skills but they are not totally capable of functioning on their own, neither are they totally dependent on the human interference to create and innovate.

### TRIPS and AI

Trade-Related Aspects of Intellectual Property Rights (TRIPS) is an Agreement entered by most nations favouring for smooth trade and intellectual property relations. The Agreement sets a minimum standard for the member states to enforce and provides many flexibilities, such as defining the term of invention to the member states accord. Main elements of TRIPS include the subject matter of patent, rights and exceptions of patent, duration of protection. In light of the TRIPS as the main document under which many countries thrive, the concept of AI to be a person and an inventor should be determined. Article 27.1 of the TRIPS states that there will be grant of patent protection for all inventions and such can be enjoyed without any discrimination in the field of technology. However, the term invention is not defined and is left upto the member countries to decide on basis of their status on what would amount to invention. Article 28 of TRIPS conveys that patent owners shall have the right to assign, transfer their right. The question here is how TRIPS defined the term “Person”. Article 1.3 defines a person- *as a national including people both natural and legal*. From this it can be interpreted that “Legal” status has to be defined on territorial basis, in each and every member state’s perspective. It is also to be noted that TRIPS do not exclude or mention that AI shall not be granted patented or be termed as an inventor.

### Current AI Scenario with WIPO

Many patents are still pending in the AI drastically increased to 50,000 patents from the year 2013; India

is the 5<sup>th</sup> leading country having a greater number of AI patent applications.<sup>7</sup> AI machine learning which is the most patentable subject matter has increased to 46.1% growth from the year 2013-2016. The fastest growing technique of deep learning has average growth of 174.6%. In statistically study by the WIPO (World Intellectual Property Organization) there has been 265% growth in the AI application for robotics and for control methods for the management of behaviour of devices has increased up to 262%. Total computer vision has 21,011 applications. Industries such as transportation has witnessed major growth in AI with electronically operated buses, the transportation industry has faced major changes along with the growth of application from that industry boomed to 134%, whereas other industries such as telecommunications holds 84% growth followed by life and medical sciences with 40% finally, the personal devices, computing and HCI(Human Computing Interaction) improving to 36%.<sup>8</sup>

WIPO has recently published a report containing the technology trends that are evolving in the field of AI revealing the top players in the industry and academically with AI related protection which has been granted in different geographic distribution.<sup>9</sup> It has also launched new AI machine which would distinguish the existing trademark from the claimed trademark, the machine is both faster and easier with peculiar accuracy of finding similar marks thereby providing a base for new expansion in new market system. On fewer inputs required there is much save in labour and cost. It can be accessed from the WIPO’s Global Brand Database, where it has been fully integrated into the database search engine.<sup>10</sup>

### Inventorship, Subject Matter Eligibility and Inventive Step

Inventor is a person who has conceived the ideas and has created the invention from scratch; the invention should have been formed in the mind of the inventor thereafter applied in practice. When it comes to AI making any creations, whether the inventorship in patent has to be granted to the AI? Who will be the owner of the patent? We do know for a fact that the true and first inventor’s name has to be mentioned in the patent application.

One of the primary criteria in the US Patent System is “making a significant contribution to the invention”<sup>11</sup> while “the formation in the mind of the inventor, of a definite and permanent idea of the complete and operative invention,” becomes the

subsequent.<sup>12</sup> Many may argue that in case of conception of an idea it is the AI which is solely responsible but AI is just the formation of human, the credit should also go to the maker of AI. But what they fail to look at is the objective of patent system, whether granting patent protection to the AI furthers the innovation and patent system forward.<sup>13</sup> Professor Schuster states that “*efficiency is best attained by allocating [artificial intelligence] property rights to parties that purchase or license [artificial intelligence] software and utilize it for invention*”.<sup>14</sup>

Under the US Patent Law System, the definition of inventor in Title 35 United States Code (U.S.C)100(f) states that patent is granted to the individual who has invented or discovered the subject matter. And in most cases the US Courts have held that invention of anything made by man under the sun can be patented.<sup>15</sup> “People Conceive and not Companies” statement insights that it is a human(s) who do the invention, they should be named as the inventor and not the companies as they are assigned to be the owner.<sup>16</sup> The US Law also wants the Joint Inventor or Inventors name to be specified in the application.<sup>16</sup> And as an inventor there must contribution on his part to the conception to invent an invention. It is thus a concluded presumption that the legislative drafters and the judiciary wanted the inventor to be a human. The reasoning to an invention can be very well given by the AI itself since it can formulate ideas on its own and compare many billions of variables and data to come to a solution.<sup>17</sup> With advancement of technology and no explicit bar existing to prevent the AI as inventors, it is only reasonable and legal to bestow inventorship on AI. Inventorship in US only requires a contribution; AI is applicable for the same as it is the main conceiver of the solution. But without the engineer or the scientist or any human it would be hard for the software to function in its own capacity. Even though title 35 U.S.C 100(f) proclaims inventors to be individuals, title 35 U.S.C.116 which discusses on omitted inventors and errors, does not explicitly exclude non-human such as AI.<sup>18</sup>

*Narton Corp v Schukra USA, Inc.*,<sup>19</sup> case is significant for understanding inventorship. The question arose on whether one such Mr. Benson was the inventor of massaging car seat. He claimed inventorship for having suggested the use of “extender for a lumbar support adjustor” in the patented invention. Neither was there contest against Mr. Benson nor did anyone accept it. Court decided

by saying that simply stating what is existing in the state of technology already known to man and present in global commons which any ordinary man skilled in the art may perform or suggest will not grant him the title of inventorship.<sup>20</sup> There needs to be some contribution from the side of the inventor and not merely the suggestions. If the legislature and the court decide that it should be an individual (human) for inventorship, Can AI as the substantial contributor be teamed along with the human who produced the software to be termed as co-inventors for the subject matter to be patented?

For a precedent where economic contribution wouldn't be a factor to claiming inventorship, the case of *T. S. Holdings v Schwab*<sup>21</sup> will hold good. Whereby for a video product to be used in automobile marketing, Mr. Barry hired a man named Schwab. A patent was obtained by Schwab which was later contended by one Mr. Barry to include his name in the inventor list but the Court disagreed with the contention stating that just by providing monetary support and instructions for creation of invention cannot be considered to be part of inventorship. From this the connotation it can be observed that human inventing AI, will not be a factor for considering the human to be the inventor, it would still belong to AI. Merely by the Input of algorithms and process codes provides the AI with only the existing knowledge and not provide the solution for the question.

### **Device for the Autonomous Bootstrapping of Unified Sentience (Dabus)**

A real life example of technological advancement in AI's creation of an invention without any human intervention is Dabus. Scientists have made an AI named Dabus (Device for the Autonomous Bootstrapping of Unified Sentience) at the University of Surrey. Dabus as an inventor without human interventions filed the first patent application for its inventions.<sup>22</sup> Based on the inter connecting neural networking system variation of connections it connects to generate a new idea whereas the other layer in it is used for detecting the consequences of the ideas.<sup>23</sup> Dabus has invented two devices, one invention is different type of drinking container having different geometrical variations whereas the other is for attracting attention in cases of search and rescue operations.<sup>24</sup> Professor Adrian Hilton, director of the centre for vision, speech and signal processing at the University of Surrey, commented: “*Modern AI may fundamentally change how research and*

*development takes place. In some cases, AI is no longer a tool, even a very sophisticated tool. In some cases, AI is automating innovation.*<sup>25</sup>

It is quite astonishing a fact that United Kingdom's IPO (Intellectual Property Office) and Europe's EPO (European Patent Office) has indicated that both the inventions can be qualified for the patent and fulfils all the primary requirements. But the question of whether such AI without human intervention be considered an individual is still unresolved. Because if it did recognise, it would amount to indirect grant of legal personality.<sup>26</sup> In US when the inventor's name is wrongly given or even excluded to be mentioned, the patent application is considered to be unenforceable.<sup>27</sup> Technology is moving way fast and we need to get ahead in the field of law and protection to foster inventive and innovative environment. However, if we go by the Monkey Selfie's case,<sup>28</sup> an Indonesian macaque took a picture on its own from the photographer's camera and the photographer claimed the ownership. Certain groups such as Ethical Treatment of Animals said that since the photographer didn't take the picture, the ownership should go to the monkey. But US patent law or any other patent law system in the world does not grant patent to animals since it's not a legal person. The US Patent office declared that the photograph neither belongs to the photographer nor does it belong to the monkey, as the only humans can avail copyright protection. U.S. Ninth Circuit Court Appeals also mentioned that no animal can sue for copyright infringement.

The questions that are more of a concern are, even if the Countries do accept the inventors name to be AI, who will hold the patent? If it is a human, how did the assignment agreement happen? If it did happen, was there consent of transfer, as consent is prior requirement for assignment. Can AI understand the circumstances in which the transfer of ownership takes place? Can AI sue and understand the consequences if it is being sued? are left unanswered.

### **Concept of AI in India**

In India, the inventorship question is pretty unclear as Section 6 of the Patents Act, 1970 states that only the true and the first inventor can apply for any patent protection or the assignee to whom it is assigned can, but the name of the true and first inventor should be mentioned.<sup>29</sup> Section 2(1)(s) on defining the term person states to include government and even non-natural entity, meaning artificial personality. And even Section 2(1)(y) does not reject the connotation of

artificial intelligence as part the term true and first inventor. From the definitions, it is clear that for patent to be granted, the AI is not specifically excluded or does it particularly say that human intervention is a must necessity for the patent to be granted. In reading the definitions of inventions and inventive step under Section 2(j) and Section 2(ja) just the creation, be it a process or product or technical or economic advancement can be present to qualify as patentable matter. Then again under Section 3(k), software patents *per se* are prohibited from being patented, whereas embedded software can be patented<sup>30</sup> i.e., the software and hardware functions interdependently, for example, a printer.

NITI Aayog, the policy think tank of India, mentioned the need for eruption of potential market and recognition of AI to be part of inventorship for progressing in IP. It also suggested that it can help the Indian citizens, the big companies such as TATA, Microsoft, IBM who are tirelessly working to get hefty patented system for AI and suggested that it may also help the Indian Governments in many ways.<sup>31</sup>

Considering the liability of AI, does AI bear all the rights and liabilities if the AI is provided with patent is the question that will be highly debatable as the nature of liability even though it can roughly be analysed by the programming mechanism of AI, the nature and the consequences of the liability and right may not be impactfully registered. There are many questions to be asked, when the AI is granted patent, how will the consent for either licensing or assigning shall be taken? Does the AI know the outcome? And if the ownership is to be transferred to another person, how will such transfer take place as it does not have any identity or legal sanction under the State? Well, even if it is considered having legal sanction, in case of infringement sometimes the compensation amount has to be paid either by royalties or redeeming back the loss, how would this be done? What would prevent AI from not infringing the patent? How will the AI understand the liability imposed upon in by the Courts and enforce the same? Are questions that need to be tendered before framing a law for AI.

### **Legal Personality**

The concept of legal person is where there is a capacity of a person being subjected to rights, liabilities and obligations of the state and establishes itself with unique characteristics in terms of interest. For example, Companies are termed as "artificial persons" created by humans. AI can communicate, has creativity, has the

ability to distinguish with knowledge.<sup>32</sup> This distinct ability comes from the human intervention through certain algorithms, codes, and programs that define the actions of the AI. It is more like an artificial person. But the only difference is that usual artificial persons have people behind puppeteering the actions of the companies but here the AI can perform and do functions on its own. Difficulties in granting AI legal personality from that of companies is that in case of criminal liability there can be a form of punishment granted to the humans due to MNC's grave violations however, AI which does not have any feelings or any senses to understand the criminal punishment is outweighing the perseverance of granting patent. There cannot be an understanding or acceptance of the liability in case of violation of law.<sup>33</sup>

But, US has different perspective, whereas under Title 35 of U.S.S.103, anything created by accident or by toil of hard work is not essential but the creation and invention that is necessary for patent. The drafter's intention can be concluded to the point that it is immaterial whether the invention came from trial and error or accident or hard work, for example the invention of the drug Arrid<sup>34</sup> came out of mixing different solvents, this did not bar it from being obvious to the person in the art. It is the process of invention of the humans and not the machines. It is quite interesting to note that the courts did not rule out the invention made by the AI, in fact software patents are impermissible in US.

In a resolution passed by the European Parliament, the Parliament urged the European Commission to grant a special type of protection to the AI known as "electronic personality". This move was termed as nonsensical and inappropriate to be included in legal status from many experts across the European Union (EU).<sup>35</sup> The European Commission did not consider the Parliament's idea for the creation of personhood since there exists liability concerns, risk and uncertainty. Other main substantial reasons are due to the facts that EU and institutions along with its commission and Parliament do not have the capacity to determine who is a "Person", the member states should decide and agree upon before it could be enforced. The only power to curb this right from the member states would be the International Human Rights Law. Secondly, there is an ultimatum risk of abuse on criminal and tax purpose frauds which may bring down the wealth and economy of the country.

#### **United Arab Emirates (UAE) on Legal Personality**

In an International Innovation Conference at Riyadh in 2017 UAE came to be known as the first

country to grant citizenship rights for a robot named Sophia. UAE is changing with its health care system to bring in robots instead of human surgeons. Almost 11,000 people from 12 countries are interested in the advanced technologies conducting the surgery and health sector as the margin of the error is low and the success rate with advancement would be 99%. In 2014, Ministry of Health and Prevention for the catheterisation and cardiac surgeries launched its first robot. In 2018, first robot was provided to the Al Qasimi Hospital to conduct the cardiac surgery.<sup>36</sup> The AI Robot Programme in Gynaecology and Obstetrics was launched by the Ministry of Health and Prevention in UAE on April 2019. The success rate in the heart surgery by the robot was found to be about 99.1% and 95% in accuracy and speed.

It is not only in the Health Industry but UAE also launched Robotic Policemen in the 4<sup>th</sup> Gulf Information Security Expo and Conference. This Robocop in the Dubai Police was equipped with emotion detectors to recognise the face emotions, gestures and hand signals to alter the expressions accordingly ease people. It could communicate in six languages and chat, interact with the people, shake hands also answer to the queries of the public. Dubai not only engaged them in Police Department but also in the Municipality using Robots as life guards at the beach to save lives as it can withstand any climatic condition. A Robot-Operated Vehicle Registration Plate Maker in Dubai was launched by the Roads and Transport Authority for speedy produce of number plates. An estimated 33,000 plates could be produced per day without any human intervention.

#### **China on Legal personality**

China uses robots to review and decide cases in the courts, the robots do the job of checking the correctness of the fact, review cases and offer sentencing opinions to the Judges. It comes to light that china has been using the Legal Robot since 2015 and reviewed 15,000 cases. The robots have been very useful for correcting mistakes and flagging very simple mistakes which changes the life of a person, commuting a conviction. Almost 154 convictions have said to be commuted since then. There are backlashes for using the AI in deciding a case as the trust level is more gained on the accuracy of the AI than on the learned Judge, sometimes the decision of the AI can be very crucial to cost the life rendering in irreversible consequences. The "Do Not Pay Robot" has been helping the people in the resolution of

around 1,60,000 parking disputes since 2015. It not only stops in the decision-making process but continues to offer other services such as advices relating to the workplace and consumer rights, advertisement areas, harassment guidance.

Hebei's Qiaoxi Court receptionist is not a human but a robot guide which will grant services to the people asking for queries. Legal consultation, court proceedings facts are provided by the robots to the visitors.<sup>37</sup> Aidam is a Robot which was developed so that it can assist students and others in the subject of Mathematics, he scored 134/150 in the China's college entrance exam in less than 10 minutes. Xiaoyi is the first AI robot to pass China's Medical Licensing Examination.<sup>38</sup> It exhibited the capability to learn, make judgements, opinions and reason on its own. But Xiaoyi doesn't practice, just assists the medical professionals to learn about the complex problems with accuracy and speed. In 2017, a Robot Dentist without human intervention put implants in a patient's mouth. Keeko an AI Robot has been used to teach about 200 primary school children in the year 2016.<sup>39</sup> It dances, plays, teaches, reads stories and even carry conversations with the kindergarten students. To make it more interesting, a man named Zheng Jiajia married a Robot in the year 2017 in a traditional marriage ceremony with Zheng's mother and other friends as witnesses.<sup>40</sup>

### Subject Matter Eligibility

Along with Novelty, Inventive Step and Non-obviousness there is a primary step which requires major attention, the subject matter eligibility. The matter to be patented must not be excluded from the patent law of the Country in order to be granted patent protection. Just like in Section 3 of Indian Patents Act, 1970, the patent subject in the application should qualify and should not be excluded.<sup>41</sup> Section 3 of Indian Patents Act is not another criterion for the grant of patent but is an inclusive concept of Inventive step. Section 2(J) defines the concept of invention " a new product or process involving an inventive step and capable of industrial application." Section 3(k) also mentions that software *per se* in Indian Patent Law is not patentable however, the embedded software can be patentable. What is an embedded software has not yet been defined clearly by the Indian Courts. From the Computer Related Inventions Guidelines, 2015 whereas under this many software patents were granted by the patent office on fulfilment of following conditions:<sup>42</sup>

- a) The invention and the software should have a novel hardware
- b) In case of invention relying solely on the computer programme then such claims should be denied by the patent office.
- c) In case of computer programme and hardware coexist then other criteria of patentability should be looked by the examiner.

The claims play a major part in recognising how the patent is to be granted. Software patents are granted recently in India for promoting innovations and incentive to the start-up companies under the make in India program.

In the 2013, case of *Accenture Global Service GMBH v Assistant Controller of Patents & Design and the Examiner of Patents*,<sup>43</sup> a patent was sought for a method on generating a data mapping document. The claims stated the following: "technical solution to a technical problem of the need for a data document design system and design tools that addresses one of the most important technical challenges faced by database systems is data migration". In such interpretation by the patent office it was concluded that the patent to be granted was not software *per se* to be prohibited under Section 3(k) of Indian Patent Law, 1970 but had implementation of hardware. The patent was granted.

Facebook obtained two patents in the year 2017,<sup>44</sup> one patent was initially sought out in 2009, the applicant claimed for a method "for generating dynamic relationship-based content, personalized for members of the web-based social network". Objections were put forth that it is mere algorithms so it is just software *per se* and can be rejected under Section 3(k). Invention has technical effect and process thus patent was granted in February 2017. From the above cases it is necessary that AI should not be just a software *per se* it should have hardware, technical effect and process to cross the Subject matter eligibility under Section 3(k).

In US, for a patent protection to be granted it should contain eligible subject matter. Under Section 101 of 35 U.S.C "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent thereof." While analysing the Section, any abstract idea, laws of nature are excluded from the patentability subject matter.<sup>45</sup> For subject matter eligibility the US Supreme Court in the case of *Alice v CLS Bank Int'l*<sup>46</sup>

had laid down two part tests: 1. Whether the patentable matter is directed to ineligible patent concept such as abstract ideas and laws of nature. 2. Whether the patent claim elements on consideration of both individually and combined transform the nature to be part of patent eligible claim.<sup>47</sup> AI should have to pass the patent eligibility test to satisfy other grounds of patent criteria for the grant of patent. However this two tests step maybe a problematic situation for AI, the courts and the legislative system has yet to analyse how to bring the AI through systemic inventions under the purview of human thought processes since from all the precedents of the Supreme Court of US recognises only the fact that “anything made by man under the sun is patentable”.<sup>48</sup> Software isn’t excluded from patent system in US. In case of any invention concluded by the AI by forming its own connections and ideas, such can be patented under the United States Patent and Trademark Office (USPTO) and for that a technical problem has to be solved by the invention claiming patent, this has to be proved to the patent office. In the case of *Alice Corp. v CLS Bank International*<sup>49</sup> the following criteria was included to remove the concept of abstract ideas and laws of nature. If the following below requirements are satisfied the patent shall be granted:

- (i) Specific hardware (e.g. sensors, remote devices, autonomous vehicle controls, processor architectures);
- (ii) Specific details about the training data or how that data is processed by the system;
- (iii) Specific data structures implementing an AI or ML system (e.g. a neural network);
- (iv) Specific heuristics being used for decision-making and/or training feedback; and
- (v) Technical improvements to the functioning of a computer.

### **Inventive Step and Non-Obviousness**

Disclosure of invention by the patent applicant is necessary criteria under Title 35 U.S.C.112(a) of US Patent System and Section 9 of Indian Patent law, 1970. Three things have to be disclosed (i) the invention (ii) making and usage of invention (iii) best method for carrying out the invention.<sup>50</sup> In relation to AI it is necessary while patenting an invention the specification must disclose the algorithms and program codes in which specific invention functions. From the specification provided the person skilled in

the art has to understand how to do the invention claimed and that the possession of the invention was with the inventor.<sup>51</sup>

Let us presume that AI as an inventor is a valid and legally pronounced law. In the US Patent System inventive step and non-obviousness are equivalent. The non-obviousness test can be taken from *Graham v John Deere*.<sup>52</sup> (i) Scope and content or prior art are to be determined (ii) Differences between the prior art and the claims at issue are to be ascertained [if obvious to the person having ordinary skill in the art (PHOSITA) then there will be no grant of patent] (iii) The level of ordinary skill in the pertinent art resolved (iv) Objective evidence of non-obviousness. The USPTO has to give special recognition to the AI and the invention falls under the non-obviousness criteria for all. Title 35 U.S.C.103 of the US Patent Law specifies that there shall not be consideration of the way in which the invention was made. This supports the fact that any invention made by the AI will not be excluded and can be claimed as patentable subject matter. The question is to what extent the degree of contribution is made by the AI to be part of inventor.<sup>53</sup> Also, the consideration of the level of ordinary skilled in the prior art may expand and go beyond what is known to a reasonable man of skilled nature, as it has accessibility to all things available online virtually. So, the standard set for the ordinary skilled in the prior art maybe very different from reality, the AI may conclude that with available information any other AI can also perform the same or similar function. Thus, rendering all the information as prior art and obvious to other AI.

India has the same or similar level of inventive step criteria under Section 2(ja) of the Patents Act, 1970. India follows the following case law in defining the border for inventive step criteria. *Windsurfing International Case*<sup>54</sup> gives a four step test to determine inventive step:

- (i) The Court must identify the inventive concept embodied in the patent in question.
- (ii) It must assume the mantle of the normally skilled but unimaginative addressee in the act at the priority date and impute to him what was at that date common general knowledge in the art in question.
- (iii) It must identify what if any differences exists between the matters cutes as being “known or used” and the alleged invention.

(iv) It must ask itself whether viewed without any knowledge of the alleged invention those differences constituted steps which would have been obvious to skilled man or whether they require any degree of invention.

Both the cases have similar factors such as ordinary person skilled in the art and prior art conceptions. Who will be the ordinary person skilled in the art for an AI which has knowledge of almost anything and everything available in the virtual online world? The closest answer is another AI, but if that is a recognised sanctioned factor i.e., another AI with similar inputs could create the same invention which bars the growth and incentive of creation of new inventions and innovations.

### Theories of Patent and AI

Theories of patent has been the root and stem for formation of laws, legal rights, liabilities, definitions and the formulation of term- owner and inventor of the patent. It gives a point of analysis with interpretation of legal law as to what will be the rights which would be conferred upon the patent holder and self-assertion of intellectual property. On whether AI could own a patent, the right way to start would be with analysis from the theories in relation to AI.

### John Locke's Natural Right and Labour Theory

Intellectual property is an intangible asset formed from the creation of mind. The right is conferred along with protection by the government for exchanging the information of the intangible asset. For creation of mind, a person has to hold a sound mind in which things can be processed to be created. A person has right over his creation from his labour.<sup>55</sup> When global commons become anti-commons using the labour and mind, intellectual property turns to a natural right. "A person has natural right to the fruits of her labour and that this should be recognized as her property, whether in tangible or intangible term." There are two theses in which John Locke summarises his points "(i) Everyone has property right in the labour of his own body. The labour of his body and the work of his hands are properly his. (ii) The appropriation of an unowned object (ideas or theories) arises out of application of human labour to that object."<sup>56</sup>

In application of Natural Right Theory, AI has a creation of mind which is created by the software developers using algorithms and program codes but the labour input of solution to the problem is from the very own conception of AI. "Fruits of the labour"

should be recognised to be the property of AI as it is the owner of the creations.

### Personality Theory

Personality theory is the self-assessment of a person while building the work and creation. Hegel who is the founder of the personality theory states that the intellectual rights along with protecting the property rights, protects the personality. The person should be given freedom to decide when and how he wants to work and how his work should be published in the public.<sup>57</sup> The only deficiency in the theory is insufficient connection between the invention and the concept of personality. The human being participating in the process of invention by the AI can be protected through the personality theory.

### Utilitarian Theory

Jeremy Bentham is the founder of utilitarian theory.<sup>58</sup> Greatest benefit for the greatest good is the norm. Incentive for the work should be given to the person responsible for creation of an invention, keeping in mind the greater utility. Utilitarian model is basically an economic and social beneficial theory, i.e., IPR has effect on the social and economic betterment of the society. If the incentive is granted, more innovations and inventions can be witnessed as people will work more by spending more money, time and effort. But just creation is not requisite, the creation should be made available to the public for their upliftment.

Utility theory can be best analysed along with the Incentive and reward theory. There is need and requirement for many works and innovations, an incentive such as royalty to be paid. If the consumers are not paying the rightful amount to the owners then owners may not meet the demands of the public, be it in quality or quantity. When the creator has made something, which is socially benefitted and useful, it is right that there is a reward for the creation. It is more like a form of gratitude.<sup>59</sup>

With inventions and technological development there will be more and more AI developed. With more AI in situation, many problems can be solved with various solutions. Let the ordinary person skilled in the art for AI be AI and the natural persons, so that many innovative approaches to the field of IP can be perceived which will be more beneficial economically and socially. For such creation, there needs to be recognition of the creation by AI through incentive and rewards as a person and inventor of such creation.



### Critical Analysis

AI has grown into the life of human being very rapidly in a way that all the work be it office, entertainment or leisure is aided by AI mechanisms. By the imputation of algorithms and program codes by the software makers, the AI processes on its own to identify the solution to the problem. Then the question of whether software makers can be awarded with patent will be disapproved as they won't satisfy the inventor criteria. The requisite of contribution from the makers side in production of the invention must be more than economically providing or instructing an AI. There are many questions to be solved, can AI claim patent for an invention, or the AI producers? What are the ways in which the AI makers can still amount to inventors in the claim of patent? There is an absolute necessity to revise the current patent legislations and regulations to accommodate the AI or entities where other than the natural person is concerned.

### Conclusion

The ordinary person skilled in the art for the persons under law and AI should be improved to include wide range of materials and sources. The fact of technological advancement and the usage of AI and its inventions benefitting the social and economic development of a country should be taken into account while considering the person who is skilled in the art. What needs to be considered is the input creation, if it is available to the rest of AI present prior to the invention. Such inputs given to the natural person skilled in the art, for example a cancer drug, the inventive step should be concentrated on PHOSITA dealing in analysing a drug invented by the AI only in the field concerning the invention. Three questions need to be satisfied to qualify for patent grant: Whether any skilled person in that field with the knowledge prior to the invention creation can achieve the same ends as AI and whether when given the inputs on that invented field, can arrive at the same solution and was obvious to the skilled person.

The suggested solution is to improve the law through TRIPS so that the member countries may recognise and keep up with the growth of technology. Analysing and providing a flexible implementable solution answering the entire question relating to inventorship, inventive step and non-obviousness testing criteria by TRIPS may increase the patentability of AI in the future.

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