Kluwer Patent Blog

Artificial Intelligence: Where is Human After All?

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I can imagine what the reader might think when reading these few lines: another text on artificial intelligence ("AI") and the Patent Law! (With perhaps: the author is obsessed with the Daft Punk split[1]). My mantra is: "Never disappoint the reader"! So both are true. That said, concerning the reception of AI by Patent Law I recently published two articles – one in English available on SSRN and one, more substantial, in Revue Propriétés Intellectuelles (i.e. a French peer review). I would like to resume here to the main conclusions of both [2].

The aim of my work was (and is still), essentially, to insist on the need to (re)take the right road, despite what I like to call "the DABUS Joke". Thus, in the two above mentioned articles, which include a preamble and two parts, I propose a simple thesis: it is necessary to take into account **what artificial intelligence really is**, technically, to be able to apply it Patent Law rules, by considering AI from two perspectives: that of the **Subject of Patent Law** and that of the **Object of Patent Law**[3].

What Artificial Intelligence really is?

Let's say it straight away: there is no real definition of what AI is. The expression itself can be used by the skilled person who rather evokes techniques which are, a posteriori, included in this category (e.g. neural network, genetic algorithm, support vector machine, etc.).

Moreover, if we focus on the terms forming the expression, we are in an impasse: does intelligence is defined by a force of reasoning or by consciousness? What is the limit between artificial and natural? Does a chip embedded in a brain make it artificial or does it remain natural? To simplify the debate, AI is often reduced to machine learning and can be defined as "*a set of techniques enabling machines to accomplish tasks and solve problems normally reserved for humans and certain animals*"[4]. This is the definition I will retain for Patent Law hereafter.

In any case, let's be clear on one fundamental point: we must be careful not to underestimate Man and overestimate the machine. *While it is undeniable that science and technology have made considerable progress in recent years, we must immediately demystify AI by rooting it in its historical and technical reality: these myths have been around for more than half a century and no is today as intelligent as Man, or even, according to Yann LeCun, as intelligent as a rat*[5]. And even in the hypothesis AI would one day be as intelligent as a human being, which is in itself incertain, a recent survey of leading industry experts suggests that about 90% of them believe that

we are unlikely to reach that stage before 2075[6]. In the same vein, the European Parliament's proposal to create an e-person statute has drawn strong criticism from experts[7].

Artificial Intelligence and the subject of Patent Law: the wrong road of DABUS

Although the hypothesis may seem far-fetched in the light of what has just been said below, I am obliged to consider it and then to dismiss it, because of the DABUS case, the latest episodes of which took place in 2019 and 2020. So: could an AI be an inventor?

I will not go into the details of the case here. Let's just recall that an applicant mentioned a machine called DABUS as inventor in two applications and that these applications were refused in England, the United States and Europe.

I will not either go back over the reasons of the Offices, but simply explain why mentioning a machine as inventor was both senseless and useless, why it looks like a marketing exercise for an academic[8].

First of all, stating that AI can be an inventor implies that it can be a subject of Patent Law, but also, fundamentally, in general, a person. The requirement of a person can be understood as a requirement of an *existential person*: in this case, only a natural person (i.e. a human being) can be a right holder. It can also be understood as the requirement of a *functional person*: this is what we retain with the legal person. Why not apply this legal person regime to AI? A simple reason: the basis of the legal person consists in its patrimony and the AI has no patrimony. One could say that it is the patrimony of AI's owner, in which case the reasoning is cyclical (and so useless): the owner might as well be the subject of law to be considered in this case. Furthermore, *the person is characterized by autonomy, i.e. a capacity for self-determination, which is characterized by a capacity to make decisions, and more precisely to guide decisions, which would therefore be independent of the instructions given by the user*. Such self-determination, which does not exist in the state of technology, would ultimately imply that Man would lose control, which is impossible since there is nothing to prevent him from cutting off the current.

Secondly, if we only retain Patent Law perspective, the qualification of inventor is irrelevant. It is now widely accepted throughout the world's legislations that *the patent right holder is the applicant and that the inventor only has a right to the patent* (i.e. the right to file it), only allowing the inventor to claim the patent if his invention is stolen before the application has been filed. Could an AI introduce such an action because its invention has been stolen? No. To conclude with DABUS, the parallel with copyright made by the applicant is just erroneous: copyright arises from the act of creation (and not from the filing of an application) and, contrary to what has been asserted, there is no moral right of the inventor, only a possible right of paternity, although one can doubt this too since: moral rights protect the personality of an author in his work, whereas the inventor does not express himself in his invention[9]; and the requirement to mention the inventor does not aim at protecting him but at "tracing" the origin of the invention.

Artificial intelligence and the object of Patent Law: the new road to take

DABUS case has nonetheless the only merit of highlighting the issue of the reception of AI by

patent law, although it has the major disadvantage of being a kind of buffoonery that has led the debates down the wrong road.

AI raises real questions, but they do not concern the right holder but the object of the right. In other words: AI, as an object, raises some difficulties when considering its patentability. However, we will see that these are essentially the same as those already known for other types of computer-implemented inventions[10].

Firstly, there is a question about the sufficiency of disclosure: should the data be provided or not? The Report of the IP5 Expert Roundtable on , held on October 31, 2018, at the EPO, provides very vague guidance: the sufficiency requirement "*may be satisfied, for example, where the applicant describes how the model was trained and provides the data used for training*" while then adding that before the same Offices, "*the application of the sufficiency of description requirement allows for some flexibility*". However, in a decision T 161/18, the EPO Board of Appeals 3.5.05 clearly rejected an application for a method of assessing cardiac output from blood pressure based on a neural network whose weights were determined by learning, finding that the application contained little indication of the input data used to train the neural network, merely stating that the data must cover a wide range of patients[11]. According to the Board, without knowledge of the data used to train the network, a person skilled in the art could not carry out the invention, and the disclosure of the invention was therefore insufficient.

While this reasoning has the merit of clarifying the method followed with machine learning, the solution should not, in our opinion, amount to requiring applicants to systematically provide input data. The neural network referred to in this case was described in a very general way, without any precision on the characteristics allowing its interaction with the other claimed characteristics: no indication on the input data structure or on the output. It is therefore not surprising that this network was deemed unusable on the basis of the information provided. This question of input data for is similar to the question of whether software should be provided with its source code. In the same way that an obligation to provide the code seems excessive, it is necessary to assess on a case-by-case basis to what extent such data may be necessary for the reproduction of the invention.

Another serious question is raised by AI: more precisely, the moment in the inventive process when inventive step can be located? In the current and foreseeable state of the art, AI does not carry out the inventive process in its entirety, since human intervention is still necessary to identify the problem, to translate it into a format that the system can understand, to train the and to select relevant results.

Thus, a distinction should be made between the actors involved in the process. On the one hand, as far as the data providers are concerned, they are only likely to make financial, organizational, administrative or mechanical contributions that are not considered to be capable of founding the inventive step. The same applies to the system operator if he does not select the relevant result, but if he does he may be a co-inventor.

On the other hand, the programmer and the data trainer are both potential co-inventors. Although the margin for the programmer remains narrow. Indeed, it tends to be considered that the programming operation alone, as such, is part of the general knowledge of the person skilled in the art, so that it cannot be the basis of an inventive activity. Programming may nevertheless be part of the inventive step if it is linked to the purpose of the invention. This may be the case if it is carried out with a view to providing a technical solution to a technical problem: if it requires a specific

implementation of the algorithm (i.e. specifically adapted to the internal functioning of the computer) or if it is a matter of applying the said algorithm to a given technical field. In any case, it is the data trainer who is most likely to be qualified as the inventor, because it is up to him to direct the system towards the desired result: he can select the data, the algorithm, and the parameters, check the performance of the system, and make the necessary corrections if necessary, in order to produce the most optimal performance, while keeping in mind the objective of the invention.

Last but not least, AI has the potential either to reinforce the tendency to objectivize to the point of negating the inventor or, on the contrary, to allow a return to a search for genius. In this sense, the issue raised by the Dabus case is ultimately fundamental. If one recognizes that can "be" an inventor, or that an invention can do without a human inventor, this amounts to denying the very existence of a certain human genius in favor of an all-out objectivist logic. One would then come to question the very philosophy of Patent Law, its purpose, by considering that the law no longer rewards an inventive activity, but rather an inventive approach in which the equipment used could make the difference. Conversely, could also lead to a refocusing on the human activity at the heart of the inventive process, in order to continue to protect inventions resulting from an inventive activity, so as to avoid making the recognition of a patent right dependent on the equipment available. At the end of the day: Is man not "*the measure of all things*", as Protagoras says?

Thus, as we have quickly seen, AI raises real questions, which current patent law is able to answer. Nevertheless, it is one of the great technical (r)evolutions of the last fifty years, together with computer science as a whole and biotechnology, which all together require a rethinking of certain aspects of patent law, for example with a European directive on patent law as a whole[12]. It remains to be seen whether Europe will be able to undertake such a project, which is fundamental for the future of its innovation and, ultimately, its economic growth.

[1] Even if Human After All is perfect for a sunny sunday morning.

[2] It goes without saying that the ideas developed here are a very abbreviated version of the developments in these articles, and the sources cited are also largely abbreviated. The aim of this text is to provide a short and easily understandable version of the theses developed. We therefore invite the reader to refer to the relevant texts for further information. Furthermore, the author, who is participating as an expert in the Innovation and Commercialization group to the Global Partnership for Artificial Intelligence ("GPAI") launched within the framework of the OECD, expresses here only personal opinions that commit him alone.

[3] In short, it is a question of starting from the fundamentals: the summa division of Roman law between the person and the thing.

[4] Yann LeCun, « Qu'est-ce que l'intelligence artificielle?? ».

[5] *Ibidem.*

[6] Vincent Müller & Nick Bostrom, *Future progress in artificial intelligence: A Survey of Expert Opinion, in Fundamental Issues of Artificial Intelligence*, Vincent Müller (ed.), Springer, 2016, p. 553.

[7] *Open Letter To The European Commission Artificial Intelligence And Robotics Artificial Intelligence and Robotics Experts*.

[8] Mr. Ryan Abbott, the man "behind" the sadly famous Artificial Inventor Project, whose goal is "seeking intellectual property rights for the autonomous output of artificial intelligence". This has the merit of being at least worthy of a speech for a second-rate novel doing bad Orwell. Maybe it should be proposed for a B-series?

[9] Frédéric Pollaud-Dulian, *La propriété industrielle*, Économica, 2nd edition, 2010, n° 331, p. 213.

[10] See *Computer implemented inventions: challenges, current practices and perspectives, Matthieu Dhenne and Christophe Geiger (eds.), LexisNexis, 2019*.

[11] See our comments : Matthieu Dhenne,*T 161/18 : la suffisance de la description à l'épreuve de l'intelligence artificielle*.

[12] See de Boufflers Institute & Henri Capitant Association, *Feedback on the Intellectual Property Action Roadmap of the European Commission*, Éditions de Boufflers, 2020, § G et H.

This entry was posted on Monday, March 29th, 2021 at 5:00 pm and is filed under AI, Case Law, EPO Decision, Inventive step, ownership, Patents, Sufficiency of disclosure, Validity
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