

# The Patent Lawyer

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## The power of paralegals post-pandemic

  
IP TrendMonitor

*The Patent Lawyer* investigates the changing legal landscape that has resulted in a shift in the function of paralegals, discovering how one particular solutions provider is opening the door to new opportunities for leveling up in the patent space.





# The debate on the inventorship of artificial intelligence: will the true inventor please stand up?

**Ricardo Costa Macedo and Inês da Silva Henriques of Caiado Guerreiro analyze the views on artificial intelligence systems as inventors when it comes to protecting innovation according to different jurisdictions.**

**T**he undergoing Fourth Industrial Revolution presents artificial intelligence as its driving engine for technological innovation, potentially relegating the human being to a secondary role in the inventive process. Faced with this paradigm shift, has humankind and its unique inventive capacity been overtaken by the wonders of artificial intelligence, or is the claimed inventiveness of computers a mere illusion?

Answering this question entails an analysis into the relationship between an invention and the nature of its inventor, whether human or not.

Ever since immemorial times, Man has possessed a distinguished capability to accommodate to its surrounding nature and, consequently, to flourish alongside it through the transformation of nature in its primal state into products and manufacturing processes that have enabled humankind to steadily progress.

From the advent of the electric light bulb to the proliferation of the telephone, the most noteworthy developments in the way people conduct their daily lives have consistently found their nexus in the ingenuity and innovation prowess of human beings. The omnipresence of this nexus connecting Man to the discovery of novel and useful inventions emphasizes the central role



Ricardo Costa Macedo



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played by human agency in steering and shaping societal evolution through its inventiveness.

Somewhere along the way, this trajectory of unceasing discovery paved by human inventors has been disrupted by the emergence of artificial intelligence systems and the applicability of its unrivalled features to virtually every essential sphere of one's existence, ushering in an unprecedented intensity in the flow of innovation.

While the First Industrial Revolution was powered by steam, the Second by electricity, and the Third by machinery, the Fourth Industrial Revolution is being shaped by the advent of intelligent computers. Artificial intelligence is no longer the science-fiction dystopia it was traditionally perceived to be, but rather a tool being incorporated into a multitude of sectors, particularly the financial, healthcare, energy, insurance, and transport sectors, rendering a wide range of innovative activities highly dependent on artificial intelligence-based technologies for their development and deployment.

Testimonies to the incorporation of artificial intelligence in said sectors may be found, *inter alia*, in the potential of intelligent computers to mitigate human errors in the processing and analysis of financial data, diagnose pathologies and automate drug discovery, improve supply



and demand forecasts for energy, enhance risk assessment models and develop autonomous vehicles. It is, therefore, undeniable that this technology is fuelling a profound transformation of the industry, operating as a tool at the disposal of the human hand to further technological progress.

Beyond functioning as invention tools, there is an understanding that artificial intelligence systems harbor an unparalleled degree of inventiveness. Underpinned by the ambition to replicate the intelligent behavior exhibited by the human mind, artificially intelligent systems – particularly those employing machine learning and deep neural networks – are capable of engaging in inventive processes in a way that was previously thought to be restricted to human agency.

Ever more so, artificial intelligence is emerging as a painter rather than a mere paintbrush, evolving from its role as a mere tool to assist humans in the process of creating innovative outputs to creating the outputs itself, with little or – as clamored for by the minority understanding – no human involvement. Such inventive potential is attained through the aptitude of artificial intelligence systems to pinpoint an innovative solution to a problem of a technical nature through the meticulous analysis and interpretation of intricate datasets,

## Résumés

### **Ricardo Costa Macedo, Lawyer and Partner, Head of the Life Sciences and Intellectual Property groups**

Ricardo's practice covers a wide range of contentious and non-contentious patent, trademark, and other IP-related rights, such as trade secrets and unfair competition, in particular in the pharmaceutical, home care, food, and insurance sectors. Moreover, he has vast knowledge of regulatory matters in these sectors.

Ricardo graduated in 1998, from the Faculty of Law of the Catholic University of Lisbon. He undertook postgraduate studies in information society law at the Faculty of Law of the University of Lisbon in 2000 and in commercial law at the College of Law, London in 2003.

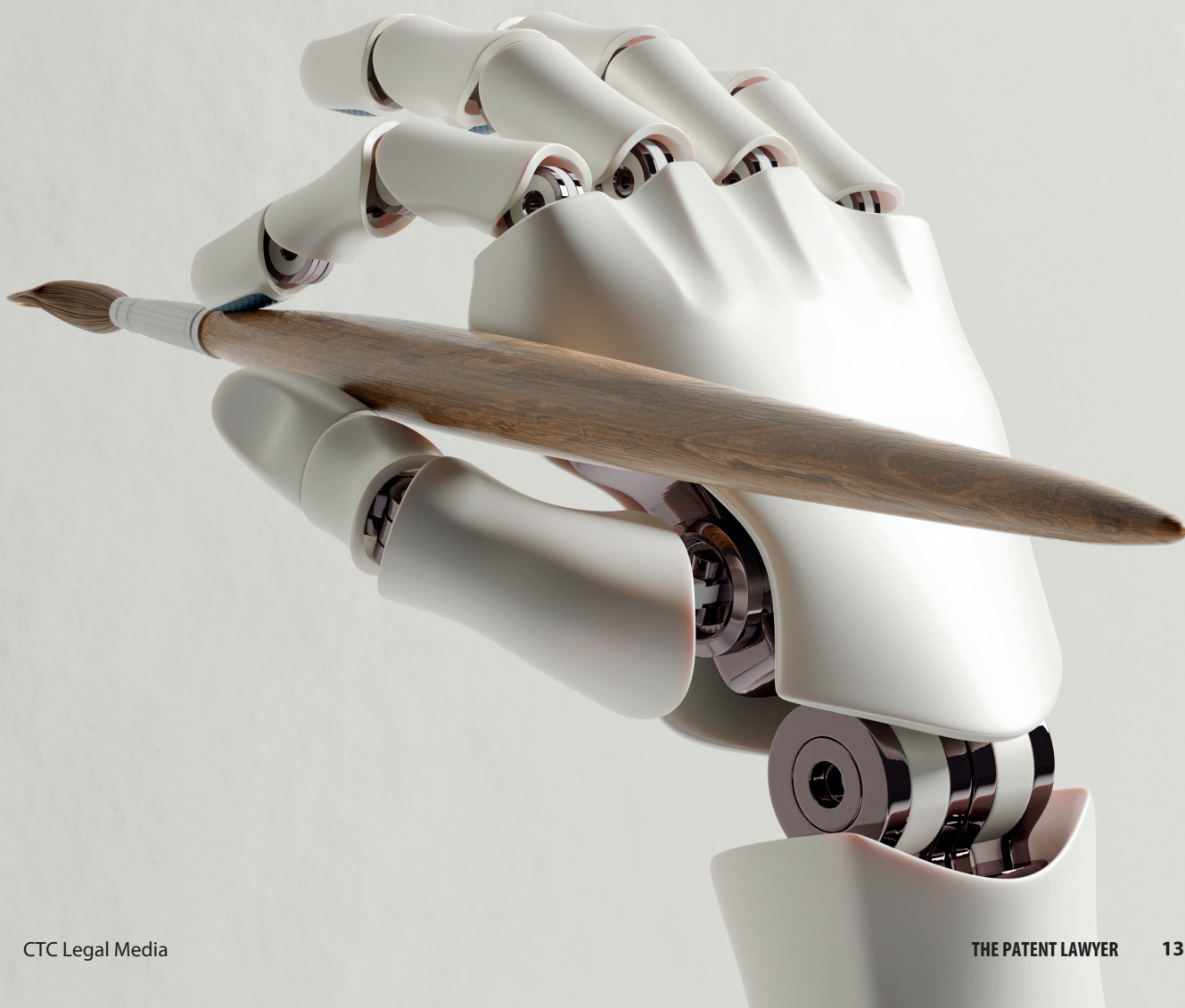
He is admitted to the Portuguese Bar Association and regularly publishes in matters relating to his fields of expertise.

### **Inês da Silva Henriques, Junior Lawyer**

Inês has been collaborating with Caiado Guerreiro since 2022 and forms part of the Intellectual Property group.

Inês graduated from the Faculty of Law of the University of Porto in 2021. In that same year, she enrolled in the Master's program in Business Law and Technology at NOVA School of Law, which she is currently completing.

At present, she is attending the Portuguese Bar Association internship in order to finalize her admission and become a fully qualified lawyer.



thereby broadening the scope of inventiveness beyond conventional human limitations.

In view of the alleged inventiveness of intelligent computers, a puzzling new debate has arisen: can a non-human entity be designated as an inventor within the patent granting process? As can be anticipated, the outcome of this debate might potentially lead to revolutionizing consequences for the current legal framework surrounding intellectual property rights, ultimately dictating whether or not it is necessary for legislators to adapt the patent system, as it stands, to the era of artificial intelligence.

Under the contemporary patent system, whoever invents or discovers any new and useful product or process, or any new and useful improvement thereof, will be considered its inventor. Accordingly, the inventor merits being designated as such in a patent granting process.

Having established this common ground, it should be emphasized that the majority of the juridical orders do not provide for an express definition of inventor, nor do they specify who may assume this position, what requirements a subject should fulfil in order to occupy this position and, even less so, the human or non-human nature of the inventor.

Regardless of the absence of an established definition of inventor, it is unanimously recognized that the inventor is the one who conceives the inventive idea and reduces that idea to practice, retaining full control over the technical execution of the invention. Furthermore, according to the interpretation of most juridical orders, only a human being is eligible to occupy this position, as they are the only real bearers of creative intellectual thought.

The patent system reflects this inherently anthropocentric vision, with the legal framework governing patent rights having been designed centered on the human being as the sole bearer of the "fire of genius in the discovery and production of new and useful things".<sup>1</sup> As such, throughout recorded history, the concept of inventorship has been connected to human agency, involving the capacities – previously thought to be unique – of Man to conceive intellectual creations through his ingenuity.

Nevertheless, recent developments challenge this conventional understanding as artificial intelligence systems increasingly display capabilities that resemble human creativity. Existing legal frameworks, which were devised with human inventors at heart, are now grappling with the complexities introduced by artificial intelligence-generated inventions.

A paradigmatic example is the patentability of the inventions allegedly generated by DABUS, the Device for the Autonomous Bootstrapping of Unified Sentience. In the words of the inventor



of DABUS, Dr. Stephen Thaler, this machine learning algorithm was responsible for the development of two inventions, namely a food container and devices and methods for attracting more attention as an emergency signal.<sup>2</sup>

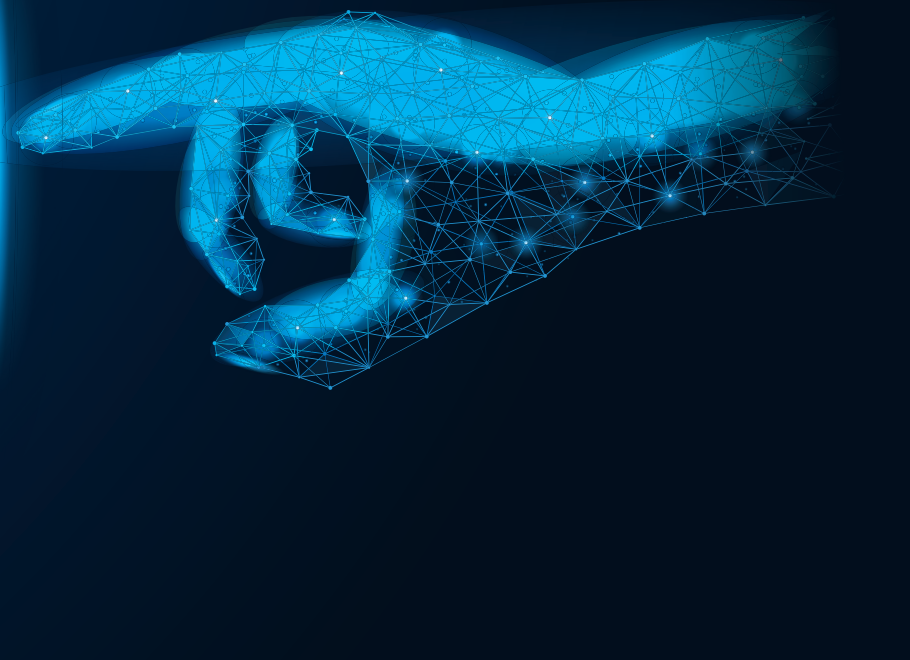
Faithful to the conviction that DABUS deserved to be designated as the veritable inventor of the subject matter, Dr. Stephen Thaler and the team supporting the Artificial Inventor Project declared, in the patent applications, that the technical process of invention had been conducted autonomously by the intelligent system. They went one step further, claiming that DABUS identified the novelty of its own invention before a natural person did.<sup>3</sup>

These patent applications were the very first of their kind, challenging the orthodox practice or expectation that only humans can be named as inventors in a patent granting process. Accordingly, the filing of patent applications for the DABUS's alleged inventions with patent offices throughout the world sparked an intense debate over the attribution of inventorship to a machine.

In this regard, it is noteworthy to mention the decisions of three patent offices from different juridical orders, namely those of the UKIPO, the EPO and the USPTO.

In the patent applications filed before these patent offices, Dr. Stephen Thaler unanimously designated the DABUS system as the inventor. To lodge these patent applications, however, Thaler would have to prove his entitlement to do so, insofar as the designated inventor did not





coincide with the patent applicant. Thaler justified his legitimacy in acting as the patent applicant and, in this capacity, filing the patent application, based on different justifications: before the UKIPO, Thaler argued that he was the proprietor of the DABUS system;<sup>4</sup> before the EPO, he presented himself, at first, as the employer of the DABUS system and, later, as its successor in title;<sup>5,6</sup> lastly, before the USPTO, he claimed to be acting as the assignee of the DABUS system.<sup>7</sup>

Despite the differing justifications put forward, these patent offices reached the same decision, concluding that the patent application should be rejected. The rationale underlying this decision shares a common denominator — namely, the understanding that an artificial intelligence machine cannot be designated as the inventor in a patent granting process, since the inventor must be a natural person.

A further argument concerns the failure of the patent applicant to fulfil the necessary conditions to file the patent application in representation of the DABUS system, since machines do not possess legal personality. The rulings of the UKIPO and the EPO converge in this judgement, refuting Thaler's argument that he had acquired the right to the patent from DABUS through, respectively, his ownership of the machine, his position as the employer of the machine and his succession in the right to request the patent.

As artificial intelligence systems do not possess legal personality, they are therefore not entitled

to rights over their outputs and, in consequence, are unable to enter into any contract to assign their right to request a patent for the invention they have generated. This absence of legal personality is further reflected in the impossibility of a machine being a party to an employment contract in the legal sense.

The unacceptability of the designation of intelligent computers as inventors is therefore an understanding currently shared by patent offices around the world, concluding the debate on the attribution of inventorship to artificial intelligence with a negative answer. The most recent judgement of the UK Supreme Court ruled along the same lines, reiterating that the inventor must be a natural person, not an artificial intelligence system that does not figure as a person, either natural or legal.<sup>8</sup>

Emphasis should be placed, however, on the finding that the decisions on the DABUS inventions were considered unpatentable, not because the inventions themselves were unpatentable, but because of the nature of the inventor, who necessarily would have to be a human being. *De facto*, these decisions merely focused on the fulfillment of the formal requirement to nominate the inventor in the patent application and did not pronounce whether the DABUS system actually invented or whether it was simply used as a tool by the human inventor. Therefore, the debate regarding the inventive capacity of artificial intelligence systems remains unsettled.

*De jure condendo*, and empathizing with philosopher Daniel Dennett's understanding, perhaps society will be better served with artificial intelligence acting as a means of assisting human inventors in their inventive endeavors, without giving them ulterior motives to invent, than it would be with artificial intelligence as a colleague in the race for inventiveness.

- <sup>1</sup> Abraham Lincoln's Patent. (n.d.). Retrieved.
- <sup>2</sup> Decision J/0008/20, Paragraph II, Boards of Appeal of the European Patent Office. Retrieved.
- <sup>3</sup> Decision J/0008/20, Paragraph II, Boards of Appeal of the European Patent Office. Retrieved.
- <sup>4</sup> Decision of December 4, 2019 on Applications No. GB1816909.4 and GB1818161.0, Paragraph 3. Retrieved.
- <sup>5</sup> Grounds for the European Patent Office Decision of January 27, 2020, on EP 18 275 163, Paragraphs 3 and 4. Retrieved.
- <sup>6</sup> Grounds for the European Patent Office Decision of January 27, 2020 on EP 18 275 174, Paragraphs 3 and 4. Retrieved.
- <sup>7</sup> Decision on Petition No. 16/524,350, United States Patent and Trademark Office, Page 1-2. Retrieved.
- <sup>8</sup> Judgment given on December 20, 2023, on *Thaler (Appellant) v Comptroller-General of Patents, Designs and Trademarks* (Respondent), United Kingdom Supreme Court, Paragraph 56. Retrieved.

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