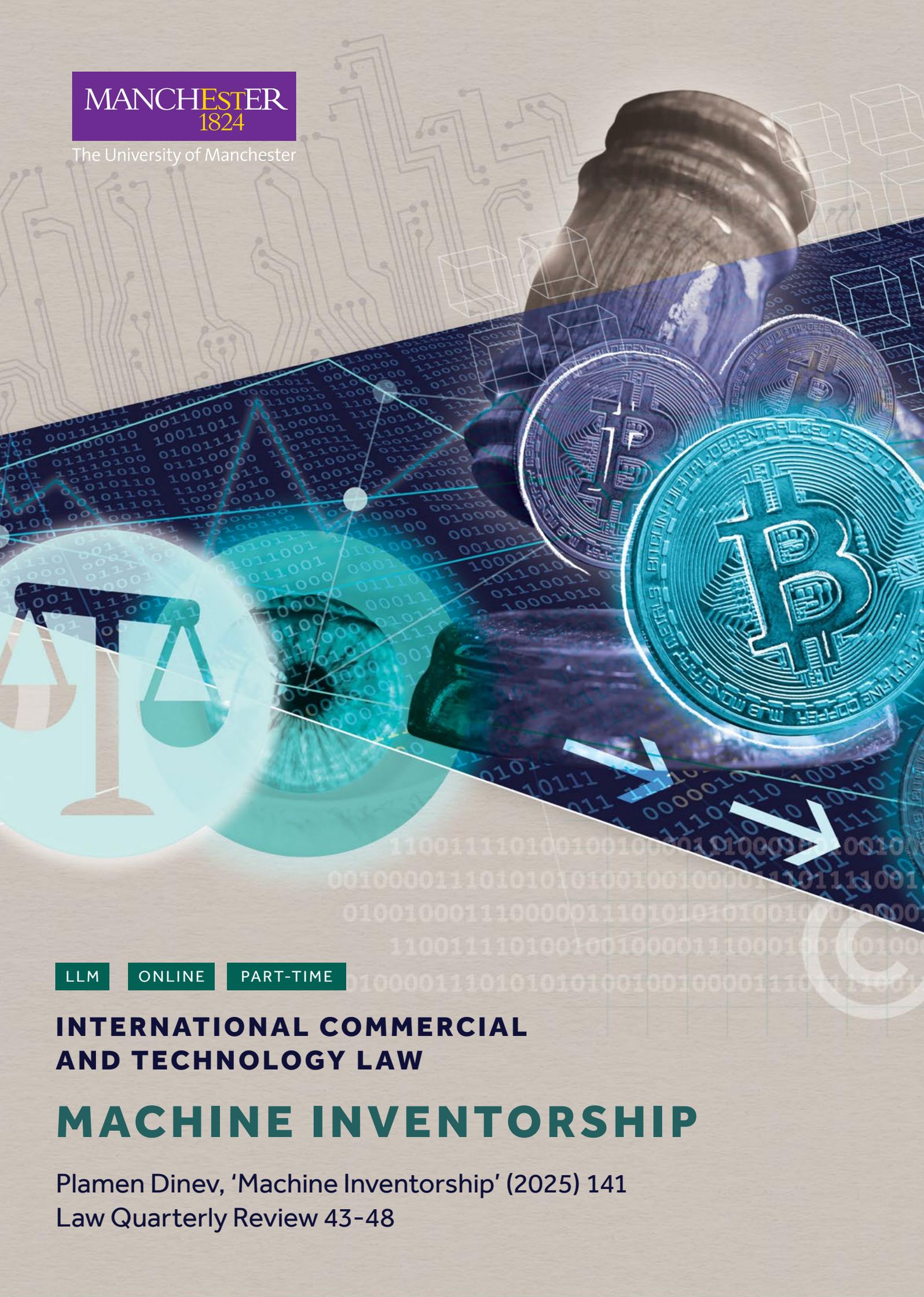


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MACHINE INVENTORSHIP

Plamen Dinev, 'Machine Inventorship' (2025) 141
Law Quarterly Review 43-48

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Thaler v Comptroller-General of Patents, Designs and Trade Marks [2023] UKSC 49; [2024] Bus. L.R. 47 – the only patent case to reach the UK Supreme Court (UKSC) in 2023 and one of the last to feature Lord Kitchin prior to his retirement – concerned the issue of computer-generated inventions. In its judgment, delivered on 20 December 2023, the court considered three questions: first, whether artificial intelligence (AI) can be designated as “inventor” for the purposes of the Patents Act 1977; second, whether the applicant, Dr Stephen Thaler, was the owner of any invention made by his AI system and entitled to apply for a patent in respect of it; and, third, whether the hearing officer’s initial decision to withdraw the application was correct. Focusing on the *meaning* of the Act, the court dismissed the appeal and refused to depart from a textualist and anthropocentric interpretation of inventorship.

In terms of factual background, the case concerned two patent applications filed by Thaler as part of the “Artificial Inventor Project”. Its team seeks the recognition of intellectual property (IP) rights for AI output and claims that there are already instances where AI “autonomously” generates new inventions. In such cases, they argue that the owner of the machine should also get ownership rights. Thaler’s applications, GB18116909.4 and GB1818161.0, respectively concerned a food container and a flashing light intended to be used in rescue missions. Although patent applicants are not always also the inventors (for instance, this may be the case where the invention is made in the course of employment or where the applicant is successor in title), what was unusual here was Dr Thaler’s claim that there was no human inventor *at all* and that the inventions were “solely conceived”

by a machine called DABUS.

In its decision (BL O/741/19 of 4 December 2019), the UK Intellectual Property Office (UKIPO) rejected both applications on the basis that AI is not a “person” as envisaged by s.7 (stating that any *person* may apply for a patent) and s.13 (the applicant must identify the *person* whom they believe to be inventor) of the Patents Act. The UKIPO held that although there is no directly relevant case law, there is a clear expectation that *inventor* and *person* for the purposes of these provisions are “one and the same”, namely a natural person; a human, not a machine (at [18]). While it acknowledged that there should be a broader debate on how the patent system handles AI, it concluded that any changes to the law should be considered in the context of such debate, and “not arbitrarily shoehorned into existing legislation” (at [29]).

The High Court dismissed Thaler’s first appeal in 2020 ([2020] EWHC 2412 (Pat); [2020] Bus. L.R. 2146). Placing emphasis on the wording of the Act, Smith J. held that s.7 explicitly refers to the grant of a patent to a “person” and therefore excludes machines. The applicant’s further appeal to the Court of Appeal was dismissed in 2021 ([2021] EWCA Civ 1374; [2022] Bus. L.R. 375). By a majority (Lord Arnold and Lady Laing) of 2-1, the court rejected Thaler’s inventorship claims and held that there is no rule of law that any intangible property made by AI entitles the machine or its owner to property rights. Lord Birss (dissenting) concurred with the majority regarding the definition of “inventor”, but argued that as Thaler had identified the person whom he believed to be inventor and thus correctly followed the procedure, the fact that the output is made by AI should not prevent him from obtaining a patent.

In a long-awaited decision, the Supreme Court unanimously rejected Thaler’s final appeal in December 2023. The judgment was delivered by Lord Kitchin, with whom Lord Hodge, Lord Hamblen, Lord Richards and Lord Leggatt agreed. The court emphasised that the decision is not concerned

with the question of whether output autonomously generated by AI *should* be patentable or whether the term “inventor” should be expanded (at [48]). While it acknowledged the broader policy issues, including the need to provide incentives to innovators, the court stressed that the appeal is solely concerned with “the much more focused question of the correct interpretation and application of the relevant provisions of the 1977 Act” (at [50]).

First, the Supreme Court tackled the meaning of the term “inventor”. It held that the structure and content of s.7 and s.13 of the Act – either when examined in isolation or in the context of the Act as a whole – “permit only one interpretation: an inventor ... must be a natural person, and DABUS is not a person at all, let alone a natural person” (at [56]). Section 7(1) states that any “person” may make an application and s.7(3) further explains that inventor means “the actual deviser of the invention”. According to the court, there is no suggestion that “deviser” has “anything other than its ordinary meaning, that is to say, a *person* who devises a new and non-obvious product or process” (at [57]). Moreover, the court drew on the earlier case of *Rhone-Poulenc Rorer International Holdings Inc v Yeda Research & Development Co Ltd* [2007] UKHL 43 [2007]; Bus. L.R. 1796 where Lord Hoffman (at [20]) noted that “inventor”, as defined in s.7(3), is “the *natural person* who came up with the inventive concept” (who in turn referred to the case of *IDA Ltd v University of Southampton* [2004] EWHC 2107 (Pat); [2005] R.P.C. 11). The UKSC then considered s.13(1) (concerning the right of the inventor to be mentioned) and s.13(2) (requiring the applicant to identify the person whom they believe to be the inventor or to indicate the derivation of their right to the patent), holding that there was “no suggestion in any of these provisions that an inventor may be a machine” (at [65]). To further support this finding, the court looked at the “broader context” of the Act and provisions such as s.2(4) (concerning the issue of prior disclosures) which similarly contemplate that there is a “natural person” behind each invention (at [68]). Therefore, while the Act does not *expressly* state that the inventor must be a human, the court relied on a variety of provisions to conclude that only natural

persons can be inventors.

Second, the UKSC rejected Thaler's claim that he was nevertheless the owner of any invention made by DABUS by virtue of such ownership. Focusing on the wording of the relevant provisions once again, the court held that non-inventors only have derivative rights when claimed through a qualifying *human* inventor under s.7(2)(b) or (c) of the Act. The former provision states that a patent may be granted where the applicant is a person who, by virtue of, for example, any enactment or rule of law or a term of any agreement with the inventor, is entitled to the property in the invention. The latter section refers to granting a patent to successors in title of any *person*. As DABUS is not a person and never qualified as inventor within the meaning of the Patents Act in the first place, these principles did not apply here. The court then assessed Thaler's reliance on the doctrine of accession which typically concerns new property produced by existing property, just like the farmer owns both the cow and the calf. By analogy, Thaler argued that as the owner of DABUS, he was also the owner of all rights in things made by it. However, Lord Kitchin held that this argument "mistakenly assumes" that AI can be inventor and "mischaracterises an invention as being or amounting to tangible property such that title to it can pass ... to the owner of the machine" (at [84-85]). As there was no tangible property involved here, the court held that there was no principled basis for applying the doctrine of accession in the instant case.

Third, and finally, the Supreme Court confirmed that the UKIPO's hearing officer was entitled to withdraw the applications, as Thaler had failed to satisfy the requirements in s.13(2)(a) (requiring the applicant to identify the person believed to be the inventor) or s.13(2)(b) (the applicant must indicate the derivation of their right to a patent if they are not the inventor). Here, Thaler had failed to identify a "person" and relied on a "flawed and legally impossible" proposition with regards to the issue of derivation (at [95]).

What is the broader significance of this decision? Widely regarded as a

test case – and the only DABUS proceeding to reach the highest judicial instance in any jurisdiction in the world – the court has set precedent and unambiguously settled the question of machine inventorship. There are several points to be made, but it is important first stress what this decision does *not* mean.

Although the publicity around the case may lead to the assumption that UK patent law does not protect inventions made with the use of AI altogether, there is nothing preventing applicants from obtaining a patent where they use the machine as a tool of assistance and name a human as inventor (however, any output purported to be completely devoid of human input would be excluded from protection). Indeed, the Supreme Court echoed Lord Birss' earlier remarks in the Court of Appeal (arguing that if only Thaler "was not such an obsessive" and named himself as inventor, none of these problems would arise (at [80-81]) and held that had Thaler claimed that he used AI as a "highly sophisticated tool", the outcome "might well have been different" (at [52]). It is also important to note that the UKIPO does not have the resources to investigate the accuracy of all statements (and it is not expected to do so), so the claim that the outputs were "autonomously" made by AI – a notion which is not universally accepted in the academic literature – was never actually examined and the decision was made on the basis that this information is factually correct (at [38]).

However, an open question remains as to how much and what types of intellectual contributions would be required to qualify for protection where AI's role is assistive. Would the mere recognition of inventive output produced by a machine be sufficient? What about training the AI or providing general instructions? The court did not address the boundaries between "AI-assisted" and "autonomously generated" inventions (an important distinction, given that AI's role in the inventive process can hypothetically be conceptualised on a spectrum which progressively moves from exclusively human-made inventions to machine-assisted and, finally, machine-generated inventions), nor what legal principles should apply where human

input is significantly diminished, yet not fully absent. Given the increasing use of AI in R&D and inventive settings, these are critical questions that would benefit from prompt clarification.

Proponents of Thaler's project may argue that the decision makes the UK a less favourable jurisdiction for patenting in this field, or that it goes against the (former) Government's strategy to adopt a pro-innovation approach to AI regulation and secure its position as a "global AI superpower" (National AI Strategy, 22 September 2021). However, the judgment does not necessarily impinge on this policy, as applicants can still obtain a patent where they use AI as a tool (as seen above). Nor does it affect the patentability of the AI system itself – a distinct question that was recently addressed by the Court of Appeal in *Comptroller-General of Patents, Designs and Trade Marks v Emotional Perception AI Limited* [2024] EWCA Civ 825; [2024] W.L.R. 339 (stating that an invention implemented through an artificial neural network should be treated like any other computer-implemented invention).

What is more, the outcome is consistent with the decisions adopted in parallel DABUS proceedings in virtually all other major jurisdictions, including the US (*Thaler v. Vidal*, 43 F.4th 1207, 1210 (Fed. Cir. 2022)), Europe (European Patent Office 0008/20, "Designation of inventor/DABUS", 21.12.2021) and Australia (*Commissioner of Patents v Thaler* [2022] FCAFC 62). Although the UKSC adopted a more contextual approach compared to the US Federal Circuit – which based its decision on express statutory provisions defining "inventor" and less so on the overall purpose of the relevant act – both courts relied on a primarily textual interpretation and arrived at the same conclusion (Thaler's subsequent petition to the US Supreme Court was rejected). Such international consolidation is to be welcomed, especially given the territorial nature of patents and the need for industry to adopt streamlined patent strategies globally. The one notable exception is South Africa, whose patent office has accepted some of Thaler's applications (No. 2021/03242). However, its depository system merely examines patent filings for compliance with basic formalities.

Crucially, by focusing on the meaning of the Act and grounding its decision in statute, the Supreme Court has made it clear that the wider policy question of whether the law *should* change is one for Parliament. Indeed, the court referred to Lady Laing's statement to this effect in the Court of Appeal with approval (at [103]):

"Whether or not thinking machines were capable of devising inventions in 1977, it is clear to me that that Parliament did not have them in mind when enacting this scheme. If patents are to be granted in respect of inventions made by machines, the 1977 Act will have to be amended."

What is next for machine inventorship? Given the remarkable rate at which AI is developing (as evidenced by the proliferation of breakthrough products such as ChatGPT), it is certainly conceivable that its role in the inventive process will become substantially more significant in future. As discussed by the UKIPO in its recent open consultation on AI (28 June 2022), there are various policy options available, including maintaining the status quo, expanding the definition of key terms in the Act, or introducing new rights. While the Office concluded that there was no evidence that UK law is inadequate at the time, it is important to consider the risks and benefits associated with each of these approaches, should a clear need for reform arise and there is compelling empirical and economic evidence to support such action.

When it comes to the existing legal framework, it has been argued that limiting inventorship to natural persons is not optimal as there may already be instances where inventions are generated without significant human input (though there is no scholarly consensus as to whether AI can indeed act with such a degree of autonomy at present) and that without the ability to obtain patent protection in such cases, AI owners may rely on trade secrets instead (see R. Abbott B.C.L. Rev (2016) 57(4) at 1103-1104). Reliance on trade secrets could potentially hinder valuable follow-on innovations and undermine the "patent bargain" – the rationale that while

the patentee gets temporary exclusive rights, the technical information disclosed in the application can be utilised by competitors and the general public upon expiry.

If reform is deemed necessary in future, Parliament could expand the definition of “inventor” to include machines and allocate ownership as suggested by Thaler, which may increase transparency and encourage applicants to disclose the role of AI. However, such an approach may overstretch existing doctrines and could be difficult to reconcile with the Act as a whole which, as seen above, extensively relies on anthropocentric standards throughout its provisions. Alternatively, lawmakers could mirror s.9(3) of the Copyright, Designs and Patents Act (CDPA) 1988, a copyright provision which states that when a work is “computer-generated”, the author shall be the person “who made the necessary arrangements”. A similar measure could be introduced in patent law, focusing on identifying the *person* who has made the arrangements necessary to devise the invention (for instance, the programmer, trainer, or user, taking into account the intellectual contribution of these parties in each individual case). This approach would mitigate concerns about internal statutory consistency and patent validity – as it would be clear that the “inventor” is a human and not a machine – while also offering substantial incentives to invest in the field and use AI with confidence. Lastly, Parliament could introduce new sui generis rights (see E. Bonadio and L. McDonagh (2020) 2 I.P.Q. 112 at 134, discussing a similar right in the context of copyright). Given the risk that patents over AI inventions may be held by a small group of dominant global corporations, a new patent-like right with a reduced scope and term of protection (for instance, 5 years or less, as opposed to the “conventional” 20 years available in patent law) could mitigate concerns about excessive monopolies while still offering some, albeit more limited, incentives to innovators.

Regardless of what policy route is adopted, reform action should ideally be coordinated at the international level. Introducing a major overhaul of classic patent doctrine unilaterally could negatively affect the UK innovation

landscape and may in fact be counterproductive. For instance, if inventorship is expanded to include machines in the UK, designating AI as inventor in a domestic patent application may make businesses unable to obtain protection in other jurisdictions which do not yet recognise this (UKIPO, 28 June 2022).

In conclusion, the Supreme Court has set precedent and made it clear that existing laws do not cater for purely computer-generated inventions. AI can neither be designated as inventor, nor transfer any rights. While alluding to the broader policy issues, the court refrained from making a normative assessment as to whether the law *should* change – so as to recognise machines as inventors or extend protection to inventions that have been “autonomously” generated by AI – and left this to Parliament. This is a critical question, given that the Patents Act was drafted 5 decades ago and there is no consensus on whether it is fit for purpose in the digital age. If a clear need for reform arises, lawmakers should strive to provide an optimal balance between incentivising the use of AI in the inventive process and mitigating the potential risk of monopoly control. In the meantime, it is imperative to provide further guidance and clearly circumscribe the limits of existing doctrine when it comes to protecting AI-*assisted* inventions.

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Plamen's research focuses on intellectual property and technology, using legal and empirical methods. He received the Modern Law Review Scholarship for 2019, which allowed him to carry out fieldwork on 3D printing in New York, and his monograph in this area will be published by Hart in 2025. His recent work on AI has been cited in reports published or commissioned by the Intellectual Property Office of Singapore, Swiss Federal Institute of Intellectual Property, European Parliament, and in an amicus brief submitted to the US Supreme Court.

Plamen is the course director for IP in the Digital Ecosystems and also teaches Criminal Law. He is a guest lecturer on the Diploma in AI and IP at Strasbourg University.



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