Chapter 2

Understanding of AI as an Inventor/Creator and Owner under the Intellectual Property Regime – Perspectives and Recent International Developments

Artificial intelligence will perhaps be the next revolutionary step after mankind graduated from internet to smartphones. Human intervention in AI programming is clearly on the wane, theoretically entitling these entities to claim patents or copyright independent of their creators who have added no value to the resulting inventions or creations. The limitations of the traditional school of thought in gauging the legal personality of artificial intelligence can be clearly understood by examining the three laws postulated by Isaac Asimov which focuses purely on the physical well-being and integrity of the human and AI entities. Social norms and intellectual property dimensions receive inadequate mention.[33] It therefore becomes necessary to analyse and find out whether these AI programmes have a will of their own and can exercise discretion in human like fashion attaching all relevant legal consequences to such exercise of will or discretion for the relevant inventions or creations. If we think from the perspective of intellectual property theories, the question arises whether an AI programme can be motivated through incentives to create or innovate or merely operate in a problem-solving mode and arrive at a result when fed with a certain input with cold lifeless intention. However, the flipside of this approach is that we tend to focus more on the identities and capabilities of the creator or inventor and less on the intellectual property subject matter which may still satisfy the threshold of legal protection. The current chapter will look at some key scholarly views in relation to suitability of AI as a subject of law and capability of being regulated at par with their human creators. In the second part of the chapter, the research will trace the contemporary legal developments in the AI and IPR space with regard to inventorship and authorship under patent and copyright laws respectively.

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33 See Isaac Asimov, The Complete Robot 105 (1995), "*...a robot: (1) may not harm a human being, or, through inaction, allow a human being to come to harm; (2) must obey the orders given to it by human beings, except where such orders would conflict with the First Law; and (3) must protect its own existence, as long as such protection does not conflict with the First or Second Law*."

2.1 Perspectives

Amir H. Khoury posits that intellectual property rights are best reserved for human beings who should be able to dictate terms as masters for creations or inventions by the AI programmes devised by them. In the absence of any link between the human entity and the work, the latter must move to the public domain and add to the collective wealth of all creations. In this regard, Khoury concurs with the views of Madeline De Kock Buning who states that an AI entity cannot be a legitimate rights holder in intellectual property and such autonomous creations must therefore enter the public domain. De Kock surmises that by entering the public domain, such intellectual property would expand our creative horizons, provide additional incentives and improve general human condition. Public domain should ideally remain an expressive space and a reservoir of common information based on which citizens can make rational and informed choices. Khoury compares private domain rights to islands in the middle of the vast ocean of public domain and private rights should only reflect the transitional stage before those rights pass on to the public domain. Until and unless the proprietor can convince the regulator of the merits granting IPR protection to his creation or invention, that work would remain in the public realm and foster future innovation as a raw material for upcoming works. Such a system is critical to ensuring free flow of ideas He disagrees with the middle ground approach advocated by Acosta claiming that such an ad-hoc regime would undermine the clarity which is required in every intellectual property system to decide the person to whom the rights should be granted. Khoury fiercely sticks to the stance that the line of distinction between man and machine must be maintained for preservation of humanity. He states that unlike broadcasters/producers who are granted special status under copyright laws despite not having created any protectable work, AI programmes cannot be granted IPRs because of their inability to be motivated by financial gain. Incentive, according to Khoury, stands at the core of every functional intellectual property system and the case of every potential right holder must therefore be judged accordingly. Khoury also argues, by placing reliance on the views of Rosemary Coombe, that

granting proprietorship to AI could amount to copyrighting of culture and compromise our rich cultural integrity and heritage which is to ensure a feedback loop of give and take between two consecutive generations. Devang Desai terms this as a principle of intergenerational equity which underlines the existence of every community historically. Undue restriction in the form of granting IPR to AI entities could lock up the creative inputs and hinder the progress of human civilization. Coombe further maintains that IPR possesses the character of human rights in its way of preserving cultural integrity and sustaining collectivities and should therefore ordinarily reside only with human beings and not AI entities which are comparable to animals incapable of holding and enjoying rights. Khoury treats AI generated works as mere by-products of innovative activities which must be kept free for everyone's access to keep the wheels of science and arts rolling. He supports the views of Landes and Posner who posit that the subject matter of intellectual property rights should be placed where it generates the maximum value – accordingly, an AI generated work would be of a greater value in the public domain where it would enrich creativity and innovation without placing undue burden of transaction costs or costs of expression on future proprietors. These works are a more appropriate fit for special exceptions contemplated under Article 13 of TRIPS Agreement as it is difficult to ascertain any adverse effect on normal exploitation and legitimate interests of AI who are never driven by incentives like human entities.[34]

The importance of a vibrant public domain is further highlighted by Erikson who theorises that promotion of such a domain is a normative project with political as well as economic justifications. This domain must therefore be shaped in a way that it is able to drive economic growth.[35]

Peter Asaro speculates whether it is possible to treat artificial intelligence programmes as quasi persons

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34 Amir H. Khoury, *Intellectual Property Rights for Hubots: On the Legal Implications of Human-like Robots as Innovators and Creators*, 35 Cardozo Arts & Ent. L.J. 635, 665 (2017)

35 Kristofer Erickson, Defining the public domain in economic terms-approaches and consequences for policy, 10 NORDIC JOURNAL OF APPLIED ETHICS 1 (2016), https://www.ntnu.no/ojs/index.php/etikk_i_praksis/article/download/1951/1986

or quasi agents under law as they begin replicating more human like performances.[36] The moot question in such a case would be whether the actions of that programme would form a part of its profile.[37] Miller reckons with respect to copyright for AI generated works that the right cannot subsist if the AI acted merely as an 'assisting instrument' and played no role in the conception or execution of the idea in the first place.[38] Acosta suggests that re-examination of the copyrights standards may be the need of the hour if the technology develops to the extent that the AI is blessed with unprecedented autonomous computational creativity. His stance is somewhat diluted though by his subsequent suggestion that coming up with super-efficient AI programmes by their creators should be incentivized only to the extent that copyright over AI generated content can be claimed by such creators – any content which is solely generated by the programme without the creator's intervention must readily flow into the public domain.[39] Tremblay uses the test of whether the AI became an 'intelligent agent' based on an algorithm rather than a 'software agent' performing under a pre-programmed design. A software agent unlike an intelligent agent would be predictable in its output and perform a certain task within the range of expectation of the creator.[40]

Two conditions are paramount for intellectual property protection – the subject matter of protection and the right holder. Even if all the necessary ingredients of the subject matter of protection (e.g. Originality and independent creation in case of copyright) are satisfied, the right will not be conferred under law as it cannot exist in vacuum. A holder must be appropriately identified and recognized under law for the protection to take full effect.[41]

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36 Peter M. Asaro, Robots and Responsibility from a Legal Perspective, in PROCEEDINGS OF THE IEEE 20 (Apr. 14, 2007), https://peterasaro.org/writing/ASARO%20Legal%20Perspective.pdf

37 Amir H. Khoury, *Intellectual Property Rights for Hubots: On the Legal Implications of Human-like Robots as Innovators and Creators*, 35 Cardozo Arts & Ent. L.J. 635, 646 (2017)

38 Arthur R. Miller, *Copyright Protection for Computer Programs, Databases, and Computer-Generated Works: Is Anything New Since CONTU?*, 106 HARV. L. REV. 977, 1073 (1993).

39 Raquel Acosta, Artificial Intelligence and Authorship Rights, https://jolt.law.harvard.edu/digest/artificial-intelligence-and-authorship-rights

40 Amir H. Khoury, *Intellectual Property Rights for Hubots: On the Legal Implications of Human-like Robots as Innovators and Creators*, 35 Cardozo Arts & Ent. L.J. 635, 649 (2017)

41 Randolph J. May & Seth L. *Cooper, Intellectual Property Rights Under the Constitution's Rule of Law*, 9 PERSP.

In this regard, Khoury makes an interesting argument. He considers only 'alive' and 'conscious' right holders as eligible proprietors of IPR. Taking recourse to the observations of Frederick Pye, he argues that the non-biological nature of AI disqualifies it from being considered alive, the reason being that the events of life and ending of life with death cannot be associated with AI. AI is purely non-biodegradable that is they are incapable of blending back into nature after ceasing to function. Furthermore, Khoury also concurs with the views of Pye and Azarian who reckon that AI lack consciousness that is awareness and understanding of situations at par with human beings. Therefore, AI cannot be treated in the same way as human beings under laws and regulations which confer rights.[42] Khoury's humanness requirement is reminiscent of the sentiment expressed in the following remarks of Charlie Chaplin in 'The Great Dictator'-

"*Don't give yourselves to these unnatural men-machine men with machine minds and machine hearts! You are not machines! You are not cattle! You are men! You have the love of humanity in your hearts! You don't hate! Only the unloved hate-the unloved and the unnatural*!"[43]

Steven Wise attempts to explain legal personhood of human beings by comparing their abilities with that of animals. According to Wise, the 'differentiating wall' is the sentience and susceptibility to suffering of human animals and the fact that it entails a bundle of rights, duties, powers and disabilities.[44] Though non humans may, to an extent, feel pain and suffering, it becomes a difficult theoretical exercise to attribute rights and responsibilities to them. The analogy can also be extended to juristic persons who lie on the periphery of the regulatory frameworks and enjoy limited recognition in the eyes of law because of their inability to 'enjoy' rights in the same way human entities can.

FROM FSF SCHOLARS (2014), https://papers.ssm.com/sol3/papers.cfm?abstractid=2509516; Rochelle Cooper Dreyfuss, *Does IP Need IP? Accommodating Intellectual Production Outside the Intellectual Property Paradigm*, 31 CARDOZO L. REV. 1437 (2010).

42 Amir H. Khoury, *Intellectual Property Rights for Hubots: On the Legal Implications of Human-like Robots as Innovators and Creators*, 35 Cardozo Arts & Ent. L.J. 635, 667 (2017)

43 Toni Selkala and Mikko Rajavuori, *Traditions, Myths, and Utopias of Personhood: An Introduction* 18 German L.J. 1017, 1029 (2017)

44 Steven Wise, Drawing the Line: Science and the Case for Animal Rights (Basic Books, rev ed, 2003) 1.

With this theoretical background in mind, it would be appropriate to examine some recent international trends which highlight the rising importance of addressing issues which lie at the interface of AI and intellectual property rights.

2.2 Recent International Developments

2.2.1 Europe

The European Commission in its report titled 'Trends and Developments in Artificial Intelligence: Challenges to the Intellectual Property Rights Framework' (December, 2020) concludes that AI is a mere instrument for authors and inventors and no alterations are required to patent or copyright laws. The report however stresses on the need for guidance and further exploration into future legal reforms. Interestingly, the report observes that fully autonomous invention by AI does not exist and will not materialize in the coming days. It does not deliberate on the aspect of whether AI needs to be considered an inventor under patent laws. The introduction section lays down the proposition that the autonomous AI inventions cannot be secured in line with the view of the European Patent Office ("EPO"), UK Intellectual Property Office and the UK High Court decisions on the DABUS patent applications. The report however stresses on the need to revisit the EPO Examination Guidelines to assess inventive step in AI assisted inventions. The Commission warned that recognizing authorless AI creations could pose a risk to the basic tenets of copyright law. An AI created database may at best be recognized for copyright for the same rationale of substantial investment at par with the neighbouring rights of producers and broadcasters.[45]

The EPO's decision of January 27, 2020, related to patent applications filed by Dr. Stephen Thaler in relation to "food container" (number EP3564144) and "devices and methods for attracting enhanced attention" (number EP3563896) where he had designated his AI programme DABUS as the inventor. However, the EPO rejected these applications on the ground that an inventor mentioned in the

[45] Christian Hartmann et al., Trends and developments in artificial intelligence, https://op.europa.eu/en/publication-detail/-/publication/394345a1-2ecf-11eb-b27b-01aa75ed71a1/language-en; See also Matt Hervey, EU report on AI-assisted creativity and invention, https://www.lexology.com/library/detail.aspx?g=6904f6ac-8973-4afd-8494-01e148111329

application has to be a human being, not a machine, based on Article 81 and Rule 19 of the European Patent Convention ("EPC"). Both these provisions are silent on the possibility of a non-human inventor. The grounds of the decision published on December 21, 2021, reveal that initially the applicant had not indicated the name of the inventor. Consequently, the Receiving Section of the EPO sent a notice under Article 90(3) and Rule 60 of EPC asking for the relevant information on the identity of the inventor within sixteen months from the date of filing. The applicant responded stating that the impugned invention had been independently created by DABUS (designation of inventor was submitted on August 2, 2019) and the application, as the owner of the programme, had to be treated as the assignee in respect of the concerned invention. The applicant had further contended that rights in such invention customarily vest with the owner of the machine which was incapable of exercising ownership rights. However, these contentions were refuted on the basis of lack of legal personality of DABUS which was merely a machine and therefore could not be treated at par with natural persons. Dr. Thaler preferred an appeal to the Legal Board of Appeal and argued that the Receiving Section had erred in treating inventorship as a fundamental condition for grant of a patent though at the time of its passing, the EPC concerned only human inventors. Dr. Thaler further contended that granting inventorship to AI would serve public interest by encouraging scientists and programmers to come up with more advanced forms of AI. Not doing so would be accompanied by 'undesirable policy ramifications. Concealing the status of AI would betray the objective of transparency of the entire patent registration process in the eyes of the general public. Dr. Thaler added that confining inventorship to natural persons was not mandated under any of the national laws of the EU member states. Pointing to the instance of Section 7 of the Patents Act, 1977, in the UK, Dr. Thaler argued that the right to apply for a patent in a product or process invented by a third person could be created through succession even in the absence of an express assignment. [46]

[46] European Patent Office, EPO publishes grounds for its decision to refuse two patent applications naming a machine as

2.2.2 UK

Dr. Stephen Thaler's application before the UK Intellectual Property Office ("UKIPO") to secure a patent for inventions by the AI programme Device for the Autonomous Bootstrapping of Unified Sentience ("DABUS") met with a negative response in its decision dated December 4, 2019. Dr. Thaler claimed that DABUS was responsible for inventing (1) a fractal design for food containers to prevent stacked containers from sticking and (2) a method for regulating the timing of warning lights to command attention. Dr. Thaler listed himself as the applicant and DABUS as the inventor. Mr. Jones, the Hearing Officer for UKIPO held that only natural persons were contemplated when the EPC was drafted, and the same logic could be extended to the UK Patents Act as well under sections 7 and 13 of Patents Act, 1977. The correctness of this interpretation has never been questioned by the courts and the law is unequivocal on the point that an inventor cannot be a juristic person like a corporation. Even the *Travaux Préparatoires* for the EPC did not indicate that an evolving interpretation was intended for understanding 'inventor'. The Office therefore could not supplant the understanding of the legislature and the courts with an interpretation which was never intended in the first place. Lastly, Mr. Jones concluded that since the very personhood of Dabus was in doubt under the patent law, it could not own or transfer ownership of the invention to Dr. Thaler, the applicant. Section 7(2)(b) and (c) require the applicant to show how the applicant derived the ownership through assignment from the inventor. However, Dr. Thaler was unable to show any such act of transfer to the satisfaction of the Office. [47]

Dr. Thaler appealed from the earlier decision of UKIPO to the UK High Court (Patents). Marcus Smith J. in his decision dated September 21, 2020, identified two important propositions:

i. Considering a non-natural person to be an inventor in patents could potentially re-write the law of personhood.

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inventor, https://www.epo.org/news-events/news/2020/20200128.html

[47] BL O/741/19

ii. It is not the job of the judiciary to interpret the law based on future exigencies which may or may not arise. Smith J. humorously quotes the example of determining personhood in the event of an alien attack. The court also observed that a revolutionary interpretation of the law in foreign jurisdictions would not have any bearing on how the English law determines property rights and personhood.

Smith J. relied on *Yeda Research and Development Company Ltd v. Rhone-Poulenc Rorer International Holdings* [48] to hold that Section 7(2) and (3) of Patents Act, 1977, forms an exhaustive code for determining who the inventor is for a patentable invention. The patent can be claimed either by the actual inventor or some other person claiming through him. So, either the actual inventor files the patent application at the Patent Office or an applicant who has derived that right from the actual inventor may claim the patent. The first category raises the question of the actual inventor being a natural or a non-natural/juristic person. Smith J. observed that the grant of a patent constituted a property right which could only be held and enjoyed by a natural person. Had it been otherwise, the Act would have definitely included a provision to the same effect. The phrase 'actual deviser' in Section 7(3) would encompass only those situations where a natural person came up with an inventive concept.[49] Equally difficult is to fit the idea of 'inventive step' into a non-natural person. Such a step could only seem obvious to the perceptions of a natural person rather than artificial persons like corporations. The second category would cover those cases where during the invention, the applicant was already entitled to own the patent by virtue of law, treaty or agreement. For example, under Section 39ff, employers' own patents for inventions created by employees in course of their employment. This category would also cover those cases where the inventors assign their inventions to the applicant. However, in all these cases, Section 13(2) require identification of actual inventors and the transfer of rights to the applicant without which the application may be deemed as withdrawn by

[48] [2007] UKHL 43
[49] See also *University of Southampton's Applications*, [2005] RPC 220, 234

the Patent Office. If there is an error in identifying the true inventor, it would allow the court or the comptroller to revoke the patent under Section 72(1)(b). Smith J. observed that the current case would clearly fall within the second category since the applicant and inventor were two different persons. So, Dr. Thaler would have to demonstrate to the Patent Office how he derived rights to the invention from the actual inventor, in this case DABUS. But, for a successful transfer of rights from DABUS to Dr. Thaler, DABUS must first qualify as a natural person capable of holding and exploiting an invention. Since, DABUS could not qualify as an inventor, it could not transfer rights to Dr. Thaler in the same way as, say, an employee would transfer to his or her employer. Smith J. also negated the use of the same rationale for copyright subsisting in computer generated works in favour of the owner of the system. He observed that unlike copyright, patents do not result automatically upon the product or process being invented. The grant of patent would be subject to compliance with all filing formalities mentioned in the statute.[50]

The issue of inventorship of AI was further considered in appeal filed before the UK Court of Appeal. In its decision dated September 21, 2021, of *In the matter of the PATENTS ACT 1977 and in the matter of patent applications GB 1816909.4 and GB 1818161.0 in the name of Dr Stephen Thaler*[51], the three-judge bench ruled in a 2:1 judgement that AI could not qualify as an inventor because it lacked personhood. Lord Justice Arnold observed that the definition of 'inventor' under Section 7(3) of the Patents Act, 1977, refers to the 'actual deviser' of the invention. A 'deviser', per the dictionary meaning, is a person who plans, contrives and executes the invention. Relying upon the observations of Lord Hoffman in *Yeda Research*, Arnold J. observed that Section 7(2), which provides a list of eligible grantees of a patent, represents an 'exhaustive code'. An application under Section 7(4) must therefore

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[50] *Stephen L. Thaler v. Comptroller-General of Patents, Designs and Trademarks* [2020] EWHC 2412 (Pat), See also Mike Pierides, Patently Obvious? AI as an Inventor After DABUS, https://www.morganlewis.com/blogs/sourcingatmorganlewis/2020/09/patently-obvious-ai-as-an-inventor-after-dabus
Devika Sharma, Artificial Intelligence Machine, can it be granted a patent for its own invention? Demystifying grant of patent to Artificial Intelligence Machine, https://www.scconline.com/blog/post/2021/09/09/ai-machines-cannot-be-inventors/

[51] [2021] EWCA Civ 1374

satisfy the requirements under Section 7(2) to qualify as an eligible applicant. The presumption under sub section (4) is therefore a rebuttable one. Arnold J. also pointed to the references of 'inventor or from any other person' in Section 2(4) (exception to destruction of novelty when unauthorized disclosure takes place through breach of confidence) to conclude that only a 'person' can be considered as an inventor under the law of patents. Arnold J. felt that the concept of a 'person skilled in the art' under the inventive step requirement in Section 3 did not provide independent support to the fact that the inventor had to be a person. However, Section 8, providing the procedure for pre grant opposition, strengthens the argument, that the grant of a patent could be claimed or disputed only by 'persons'. Section 12 contains the analogous procedure for foreign and convention patents. More importantly, Section 13, which is a manifestation of Article 4ter of Paris Convention, entitles an inventor to be identified and mandates that the applicant must mention the inventor in its application. Only a 'person' can have this kind of a right of 'paternity' i.e. the right to be identified as a creator of a thing.

Dr. Thaler had accepted that DABUS did not possess the requisite legal personality to validly transfer the interest in the invention to him. He based his claim on a 'rule of law' that he was entitled to the 'whole of the property' under Section 7(2)(b) to any creation of DABUS since he owned DABUS itself. Dr. Thaler relied on Blackstone's Commentaries on the Laws of England, Book II, Chapter 26, Paragraph 6, Pages 404-405, where the Roman law on doctrine of property arising from accession was said to be incorporated into the English. Under this doctrine, if there was a subsequent accession to a corporeal substance through natural or artificial means (e.g. growth of vegetables, animal giving birth, conversion of metal into a container etc.), the original owner could claim possession of the improved thing which had transformed itself into a 'different species.' But Arnold J. refuted this contention on the ground that Section 7(2)(b) was enacted to cater to situations described under Section 39(1) where the 'inchoate property' in the invention vested in the employer even though it was created by the employee. Additionally, the doctrine of accession did not apply in case of intangible property like patents,

copyright etc. because they are 'non-rivalrous' in nature in the sense that consumption by one person does not stop another person from consuming it. Thus, the concept of 'dominion' or 'exclusive possession' which gives rise to the doctrine of accession has no applicability in the domain of intellectual property. Arnold J. concluded that since a machine could not be considered as an inventor, it could hold no rights. Since it could hold no rights, it could not legitimately transfer those rights to the creator. Lastly, Arnold J. held that the Comptroller could not be prevented from satisfying himself of the requirements under Section 13 i.e. identification of inventor and indication of derivation of right by the applicant from the original inventor. This power did not entail determination of factual accuracy but rather a prima facie satisfaction on face value of the information contained in the application. Lady Justice Elisabeth Laing expressed her concurrence with this aspect of the judgement. However, Lord Justice Birss dissented holding that the Comptroller was not empowered to ratify the factual accuracy of the statements made in the patent application. As long as the inventor had been named in the application and the applicant indicated how he derived the right from the actual inventor, Section 13 was satisfied, and the Comptroller could not inquire any further. To substantiate this point, Birss J. relied on the opinion of Whitford J. in *Nippon Piston Ring Co.'s Application*[52]. A third party who wants to contest the grant could either file a pre grant opposition under Section 8, a post grant opposition under Section 37, or apply for revocation of patent under Section 72. An additional reliance was also placed on the Bank's Committee Report of 1970 where the Committee had observed that the eligibility of filing a patent application could not remain confined only to the 'true and first inventor' but should also include an importer and assignee without imposing burdensome requirements. Unlike the provisions in the older legislations, the Committee recommended that the assignee should not be compelled to produce a written assent from the actual inventor. This aspect is reflected in the provisions of Patents Act 1977 where Section 7(4) creates a presumption in the favour of the eligibility

[52] [1987] RPC 120

of the applicant as long as the requirements of Section 7 and 13 have been satisfied. Birss J. disagreed with the decision of the hearing officer and the UK High Court, and ruled that Dr. Thaler's application could not be treated as withdrawn under Section 13(2) since he had complied with all the requirements of Section 13 according to his honest belief. The Comptroller could not question the factual merits of Dr. Thaler's statements in the application. Birss J. however, agreed with his companion justices that only a 'person' could be considered as an inventor under the patent statute. He referred to the concept of 'true and first inventor' in the older statutes like Statute of Monopolies, 1623, and Patents Act, 1949, to conclude that the 'person' who was the original inventor had to be identified in the application. In case of an assignment to the applicant, a written assent had to be provided by the applicant along with the patent application under Sections 2(2) and 2(3) of Patents Act, 1949. Section 16(2) of the same Act also contained references like 'notwithstanding that any other person', 'no person shall be deemed to be the inventor...by reason only that it was imported by him into the United Kingdom' which indicated the following:

a. Only the actual deviser of the invention could be considered as the 'inventor' and no other persons,

b. An importer could not be considered as the inventor, and

c. Only a 'person' could qualify as an inventor.

To quote Birss J. verbatim –

"*Machines are not persons. The fact that machines can now create inventions, which is what Dr Thaler says happened in this case, would not mean that machines are inventors within the meaning of the Act. Assuming the machine is the entity which actually created these inventions, it has no right to be mentioned as the inventor and no right to employee's compensation under s39...*"

Though the three judges disagreed on few aspects of the patent application, the point of note is that all of them unanimously observed that by virtue of being a machine, DABUS did not command sufficient personhood to qualify as an inventor. Only a natural person could be treated as an inventor under law

and law only permits such natural persons to legally assign their rights to an interested applicant under a contract. The view has recently been affirmed on appeal by the UK Supreme Court on December 20, 2023. The apex court expressed its reluctance to go into the broader question of whether AI generated works should be protected under patents or whether the concept "inventor" ought to cover AI. Such an exercise could potentially go beyond the judicial function of simply interpreting the existing law.[53]

Even the panelists in the 2020 IP Tech Summit agreed that the EPO in the currently pending DABUS appeal will not enable an AI-system to be identified as the inventor on the application. This stance has also been adopted in AIPPI Resolution Q272 which states that "*An AI should not be considered an inventor or a co-inventor of an invention, nor be permitted to be named as such, even if no contribution to the invention by a natural person is identifiable*."[54]

2.2.3 USA

The United States however had taken cognizance of the AI associated legal and policy issues in IPR a few months beforehand, as evidenced by the 'Request for Comments' issued by the USPTO on August 27, 2019. The regulator realized the need for a formal interaction with the community of AI experts for tackling the issues of inventorship, ownership and enablement with respect to patents. The document sought inputs on whether the law should distinguish between inventions developed with the help of AI and those that are developed independently by AI. For the latter category, would it be possible for the human creator of the AI to be legally recognized as the co-inventor having contributed to the conception of the invention in some way or the other? The document also solicited views of the stakeholders on the rightful owner of an AI generated work and whether it is required redefine our understanding of enablement of an invention to accommodate even those disclosures which can be comprehended reasonably by deep learning AI systems. In October 2020, the USPTO published a report titled 'Public Views on Artificial Intelligence and Intellectual Property Policy' on two formal

[53] *Thaler v. Comptroller-General of Patents, Designs and Trade Marks* [2023] UKSC 49

[54] Annsley Merelle Ward, The role of big data, SEPs, PAEs and copyright in Digital Transformation: IP Tech Summit 2020 Report, https://ipkitten.blogspot.com/2021/01/guest-post-role-of-big-data-seps-paes.html

requests for comments. This report recognized that AI-generated creations pose regulatory challenges beyond those of AI-assisted creations. The Respondents classified AI as a subset of principles of computer-implemented inventions and found that the current USPTO guidance is equipped to handle computer-handled advancements. The general opinion was that AI is not sufficiently advanced and will not be for some time to warrant the exclusion of a human inventor.[55]

Currently, the United Kingdom Intellectual Property Office ("UKIPO") is analyzing responses to a consultation spanning over a period from October 29, 2021, to January 7, 2022.[56] Among the multiple questions raised by the consultation, following are relevant for this research:

a. *"Copyright protection for computer-generated works without a human author…should they be protected at all and if so, how should they be protected?*
b. *Patent protection for AI-devised inventions. Should we protect them, and if so, how should they be protected?"*

Three options were identified for protecting copyright in computer generated works:

"Option 0 - Make no legal action.

Option 1 - Remove protection for computer-generated works.

Option 2 - Replace the current protection with a new right of reduced scope/duration."

For patent inventorship, the following four options were outlined:

"*Option 0 - Make no legal change.*

Option 1 - "Inventor" expanded to include humans responsible for an AI system which devises inventions.

Option 2 - Allow patent applications to identify AI as inventor.

Option 3 - Protect AI-devised inventions through a new type of protection."

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[55] Rahul Kapoor and James Mulligan, Artificial Intelligence and Intellectual Property: Transatlantic Approaches https://www.lexology.com/library/detail.aspx?g=da7ffc2d-e1b7-46ef-9eb5-5865cbd69e83&utm_source=Lexology+Daily+Newsfeed&utm_medium=HT%E2%80%A6

[56] UK Government, Artificial Intelligence and IP: copyright and patents (Closed Consultation), https://www.gov.uk/government/consultations/artificial-intelligence-and-ip-copyright-and-patents

The consultation acknowledges the need to balance the elements of human innovation and creativity with promoting the technological development of AI, as AI continues to become more autonomous.[57] Similar to Europe, the patentability of DABUS did not find much favour in the US. In its April 22, 2020, decision, the USPTO refused to vacate a notice of missing parts for Patent Application No. 16/524,350. The USPTO negated the prospect of DABUS being named as an inventor in the application because 35 USC 101 only accommodates natural persons as inventors. A plain reading of the statute, in particular 35 U.S.C. § 115, which uses words like 'himself', 'herself', 'individual', and person', suggested that a non-natural person could not qualify as an inventor for naming in the application. The USPTO relied on the Federal Circuit's decision in *Univ. of Utah v. Max-Planck-Gesellschafl zur Forderung der Wissenschaflen*[58], where it was observed that a state could not conceive of an invention since conception can only happen in the mind of an inventor – a natural person. This understanding is further strengthened by the provisions of Manual of Patent Examining Procedure which defines 'conception' as the 'mental part of the inventive act'.[59]

On September 2, 2021, the District Court for the Eastern District of Virginia upheld the USPTO's view that AI could not be listed as inventors on U.S. patents because an 'inventor' must be a human being. Brinkema J. opined that the definition of 'inventor' as well as 'joint inventor' in the Patent Act and America Invents Act only included an individual. The court relied upon the Supreme Court's interpretation of the word 'individual' under the Torture Victim Protection Act which stated that only a natural person could qualify as an individual.[60] Furthermore, the decision draws upon the authorities of

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[57] Jennifer O'Farrell and Doug Ealey, AI & IP Consultation - Focus on Patents, https://www.dyoung.com/en/knowledgebank/articles/ai-ip-consultation-patents; See also Robert Dickens, Artificial Intelligence and Intellectual Property: what next for the UK?, https://www.allenovery.com/en-gb/global/blogs/digital-hub/artificial-intelligence-and-intellectual-property-what-next-for-the-uk

[58] 734 F.3d 1315 (Fed. Cir. 2013)

[59] United States Patent and Trademark Office, In re Application of Application No. 16/524,350, https://www.uspto.gov/sites/default/files/documents/16524350_22apr2020.pdf

[60] *Mohamad v. Palestinian Auth*., 566 U.S. 449, 453-54 (2012)

University of Utah v. Max-Planck-Gesellschaft[61] and *Beech Aircraft Corp. v. Edo Corp*.[62], to conclude that inventors must be natural persons. Policy considerations based on the potential benefits of recognizing AI as inventors could not overcome the limitations of a statute's plain language.[63] Brinkema J. remarked that artificial intelligence may attain the requisite sophistication one day to lay its claim on inventorship, but it was purely the Congress' call whether to include such an entity within the definition of 'inventor'. The courts could not interfere with what lay strictly in the legislative domain. The finding is further substantiated by the USPTO report titled 'Public Views on Artificial Intelligence and Patent Policy', October 2020, where majority of the commentators observed that the current AI state of art is quite narrow and largely restricted to functions like image recognition, translation, etc. AI in its present condition could be viewed as a mere extension of human intelligence. Therefore, the concept of AI as an independent inventor working without any intervention from its human creator is a misnomer.[64] It is noteworthy that a similar conclusion is echoed by the UKIPO survey on AI and intellectual property. The office published the results of its consultations on March 23, 2021. It was categorically observed that AI systems could not be yet seen as independent agents applying for patents without human intervention. Most of the respondents felt that such a determination would require a superior level of artificial general intelligence which is not the case yet with the current state of art.[65] On February 14, 2022, the Review Board of the United States Copyright Office ("Review Board") refused to provide copyright for the art work produced by AI due to the traditional view that only a human being can be considered as an author of a copyrightable work. Dr. Stephen Thaler had filed a suit for an AI generated work under 'work for hire for the owner of the creative machine'. The

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[61] 734 F.3d 1315, 1323 (Fed. Cir. 2013)
[62] 990 F.2d 1237, 1248 (Fed. Cir. 1993)
[63] *Fisons PLC v. Ouigg*, 876 F.2d 99, 101 (Fed. Cir. 1989); *Sandoz Inc. v. Amgen Inc*., 137 S.Ct. 1664, 1678 (2017)
[64] *Stephen Thaler v. Andrew Hirshfeld, Performing the Functions and Duties of the Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office*, et al. 1:20-cv-903(LMB/TCB) (E.D. Va. Sep. 2, 2021)
[65] Consultation outcome, Government response to call for views on artificial intelligence and intellectual property, https://www.gov.uk/government/consultations/artificial-intelligence-and-intellectual-property-call-for-views/government-response-to-call-for-views-on-artificial-intelligence-and-intellectual-property/

art work was labelled as 'A Recent Entrance to Paradise'. Dr. Thaler claimed that the work has been autonomously created by the algorithms of the computer. The Review Board however refused to grant copyright protection due to the lack of human authorship. The Board further explained that longstanding principles of Copyright could not be ignored simply based on new innovations. Copyright could only be given for the intellectual labour of a man**.** An author is a person who gives effect to an idea. The Review Board accordingly concluded that human authorship was a fundamental component of copyright protection. AI has not yet reached a stage where it is self-reliant enough to be called an 'author'.[66] In its decision titled '*Cancellation Decision re: Zarya of the Dawn*'[67] by the U.S. Copyright Office on Feb. 21, 2023, the Office determined the test for authorship of copyrightable works created through AI generated content and human inputs. It was observed that where the input of AI is more than *de minimis*, the applicant must prove that the human creator of the AI had 'creative control' over the manner in which AI was used to generate content. If the content generation is solely mechanical, the application for copyright would be rejected as copyright could only subsist in a work of human authorship. The decision has been referred in the latest 'Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence' in March, 2023. While the guidance released by the Office represents an encouraging futuristic outlook in scrutinising AI generated works more consciously and cull out human inputs, the Office continues to stick to its traditional stance on human authorship. The decision of granting copyright to an AI generated work, according to a policy statement released by the Office will be circumstantial depending on the manner of use of AI tool by the human creator.[68] The position has been confirmed yet again in a notice for comments issued by the Office on

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[66] US Copyright Review Board, Second Request for Reconsideration for Refusal to Register A Recent Entrance to Paradise, Correspondence ID 1-3ZPC6C3; SR # 1-7100387071, February 14, 2022, https://www.copyright.gov/rulings-filings/review-board/docs/a-recent-entrance-to-paradise.pdf; See also US Copyright Office, Compendium of US Copyright Office Practices, § 306, The Human Authorship Requirement

[67] U.S. Copyright Office, Cancellation Decision re: Zarya of the Dawn (VAu001480196), https://www.copyright.gov/docs/zarya-of-the-dawn.pdf (letter from the Office to applicant cancelling the original certificate and issuing a new one covering only the expressive material created by the applicant)

[68] Brooks Kushman PC, U.S. Copyright Office Opens the Door for AI-Assisted Work to Gain Copyright Protection, https://www.lexology.com/library/detail.aspx?g=04d34f34-b97e-4e5d-837a-1782e498eb30

August 30, 2023.[69] The notice came close on the heels of Judge Howell's decision in *Thaler v. Perlmutter*[70] on August 18, 2023, which reviewed the copyrightability of 'A Recent Entrance to Paradise' as determined earlier by the Copyright Office. Speaking for the United States District Court, District of Columbia, Judge Howell emphatically declared that human authorship is the foundation on which copyright rests and thus the Creativity Machine of Dr. Thaler could not qualify as an author in the copyright application. Neither does such an AI have the capability of enjoying rights in the protected work nor can it confer ownership on its developer simply by being possessed by the developer.

In the realm of patents, the Court of Appeals for the Federal Circuit ("CAFC") confirmed USPTO's earlier ruling in *Stephen Thaler v. Katherine K. Vidal, Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office, United States Patent and Trademark Office*.[71] Holding that the language of the patent statute contained no ambiguity, the CAFC noted that under 35 U.S.C. § 100(f) of the America Invents Act, 2011, 'inventor' means an individual which is commonly understood to be a human being in the legal parlance. Considering the fact that the law was plain and unambiguous, there was no necessity for any purposive exercise to ascertain the real meaning of the term 'inventor'.[72] The same approach of referring to an 'individual' is also evident in 35 U.S.C. § 100(g) which defines 'joint inventor'. Dr. Thaler had contended that the term 'inventor' should be construed liberally due to the presence of the word 'whoever' in Section 101 and 271 (dealing with conditions of patent infringement) including companies, firms and other non-human things. The dictionary meaning of 'whoever' is clearly broader than 'individual'. Additionally, Dr. Thaler argued that the nature of patent protection should not depend on the way in which the invention was brought into

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[69] United States Copyright Office, Artificial Intelligence and Copyright, 59942 FEDERAL REGISTER, VOL. 88, NO. 167, https://www.copyright.gov/ai/docs/Federal-Register-Document-Artificial-Intelligence-and-Copyright-NOI.pdf

[70] Case 1:22-cv-01564-BAH (August 18, 2023)

[71] Case: 2021-2347 (Decided: August 5, 2022)

[72] *Bostock v. Clayton Cnty.*, 140 S. Ct. 1731, 1749 (2020), "*This Court has explained many times over many years, when the meaning of the statute's terms is plain, our job is at an end.*" See also See also *Matal v. Tam*, 137 S. Ct. 1744, 1756 (2017)

existence, otherwise it would be a contravention of 35 U.S.C. § 103. A non-obvious invention could also result from routine tests or experiments.[73]

Citing its approval for *Mohamad v. Palestinian Auth*.[74], the court held that the use of the words 'himself' or 'herself' instead of 'itself' in § 115(b)(2) also signifies the intention of the legislators to restrict inventors only to natural persons and not AI. Like human inventors, AI cannot be considered capable of giving oaths stating its beliefs. The use of the word 'whoever' in Title 35 for patentability and infringement does not exempt the applicant to satisfy the requirement for 'inventor' under the title.

Dr. Thaler argued that inclusion of AI within the meaning of 'inventor' would be in sync with the broader policy of patent law as it would incentivize inventive activities and lead to a dissemination of knowledge with the general public. However, the CAFC felt that such an argument was merely speculative and did not offer a compelling justification to override the plain, natural and ordinary meaning of the word chosen by the legislature.[75] The CAFC also dismissed Dr. Thaler's contention that a restrictive interpretation of 'inventor' would undermine the objective underlying U.S. Const. art. I, § 8, cl. 8 by curtailing 'progress in science and useful arts'. The court opined that such a question of 'constitutional avoidance' could only be raised in matters of unconstitutionality which was not the case with the current patent statute.[76] Equally, the grant of the patent to DABUS in South Africa could not be treated as a precedent in interpreting the relevant US patent law. The CAFC therefore affirmed the decision of the District Court. In the latest turn of events, the US Federal Supreme Court declined to hear the appeal and grant a writ of certiorari in an order dated April 24, 2023.[77]

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[73] *Honeywell Int'l Inc. v. Mexichem Amanco Holding S.A. de C.V.*, 865 F.3d 1348, 1356 (Fed. Cir. 2017); *Graham v. John Deere Co.*, 383 U.S. 1, 15 (1966)

[74] 566 US 449, 453 (2012)

[75] See also *Sw. Airlines Co. v. Saxon*, 142 S. Ct. 1783, 1792-93 (2022).

[76] *Veterans4You LLC v. United States*, 985 F.3d 850, 860-61 (2021), *Warger v. Shauers*, 574 U.S. 40, 50 (2014)

[77] ORDER LIST: 598 U.S., April 24, 2023, https://www.supremecourt.gov/orders/courtorders/042423zor_1p24.pdf, See also Blake Brittain, US Supreme Court rejects computer scientist's lawsuit over AI-generated inventions, https://www.reuters.com/legal/us-supreme-court-rejects-computer-scientists-lawsuit-over-ai-generated-2023-04-24/

2.2.4 Other Jurisdictions – Australia, New Zealand, South Africa and India

A classic example of a liberal approach towards non-human inventor can be seen in the July 30, 2021, decision by the Federal Court of Australia. The case pertained to Dr. Thaler's application No. 2019363177 before the Australian Patent Office to secure a PCT patent for inventions by DABUS. Dr. Thaler had mentioned DABUS as the inventor in the application on account of the concerned invention being generated autonomously by the AI programme. When the application reached the stage of national scrutiny, Dr. Thaler was informed by the office that the application did not comply with Regulation 3.2C of Patents Regulations, 1991, ("Regulations") because an inventor ought to be natural person. If this requirement was not met, the application would be summarily rejected on procedural grounds. The intimation was followed by an order from the Deputy Commissioner upon completion of the 'formality check'. The Deputy Commissioner observed that DABUS did not qualify as a natural person and hence could not be listed as the inventor in Dr. Thaler's application. The Commissioner substantiated his view with the reasoning that the plain, natural and ordinary meaning of the word 'person' in Regulation 3.2C of the Regulations did not accommodate an AI programme. Also, the applicant had not furnished sufficient evidence to back up their assertion of including a non-natural person within the meaning of 'inventor. A bare reading of Section 15(1) of Patents Act 1990 suggests that 'person' means a 'nominated person' under Regulation 3.1A of the Regulations. Based on a perusal of *JMVB Enterprises Pty Ltd v. Camoflag Pty Ltd*[78], the Commissioner opined that ownership of the patent could vest only with the inventor or an assignee of such inventor. This made it more difficult for an AI to be treated as the inventor because it neither it is capable of enjoying ownership or transfer the ownership under an assignment. The commissioner rejected the 'fruit tree analogy' presented by Dr. Thaler for claiming ownership in DABUS' invention because unlike a patent, a tree was not required to assign the ownership of the fruit to the owner of the garden. The lack of capability of the AI to enter

[78] [2006] FCAFC 141

into contracts also ruled out a scenario where the applicant could be treated as an agent of the inventor. This ruling was reversed by the primary judge. Beach J. observed that the ordinary meaning of the word 'inventor' did not exclude non-natural persons. Unlike copyright law, patents did not require a human inventor. The restriction which would hold true for conferring ownership to a non-human entity would not apply in case of inventors. Beach J. opined that the Commissioner's construction of the term 'inventor' was not in sync with the rapidly evolving nature of technology in modern times and therefore was antithetic to the object set out in Section 2A of the Act to promote and disseminate technological innovation. Beach J. delved into the nature of AI technology implemented in DABUS and pointed out that the circuitry of DABUS represented a simulation of human brain. As opposed to use of error gradients in older AIs, DABUS used reinforced conceptual chains. Consequence chains branched organically from a concept with functional definitions attached to each consequence. The application of network resonances to aid creation of chaining topologies dispensed away with the requirement of matching the output to the input. Complex neural architectures tie up using scalar resonances. 'Inventor' being an agent noun could include both a 'person' or a 'thing' that invents. The new approach would mean that now even non-natural entities which perform human function can qualify as 'inventor' for the purpose of Australian patent law. However, only a human or other legal person could qualify as an owner, controller or patentee. An AI may be an inventor but could not be treated as the owner, controller or patentee. Since Dr. Thaler owned and controlled DABUS, the products or processes invented by DABUS would be in Dr. Thaler's possession and he would derive his ownership from such possession. Beach J. held that a more liberal construction of the term 'inventor' would encourage further innovation in the field of computer science and also provide incentive to a greater application of AI in coming up with patentable inventions. It was additionally observed that if the causation of the invention could not be traced back to any other entity, DABUS remained the only plausible inventor. It would be unfair to deny patentability to an invention simply on the basis of a

reason which is not obvious from the language of the Act or Regulations. Beach J. also rejected the argument that allowing AI to be treated as an inventor would flood the system with an unwanted load of patent applications from other AIs because the applicant would be a legal or a natural person even in case of AI generated inventions. Lastly, based on the ruling in *Stack v. Davies Shephard Pty Ltd*[79] Beach J. concluded that Dr Thaler was the owner, programmer and operator of the AI, and therefore would automatically own any inventions produced by DABUS due to the application of fundamental principles of property law. Thus, the need of assignment by the AI inventor in this case did not arise.[80] This decision was overturned by the Full Federal Court in *Commissioner of Patents v. Thaler*[81] in its decision dated April 13, 2022. The Commissioner contended, based on Explanatory Statement to Select Legislative Instrument No. 88, 2015, that a patent application could not be processed in the absence of mention of the legitimate inventor as it was critical in determining ownership of the concerned patent. The application must therefore be rejected under Regulation 3.2C(5) of the Regulations. The rejection could not have been kept in abeyance as the question of inventorship is a 'matter of principle' which had to be settled at the very outset. The Commissioner further argued that the issues of inventorship and patentability of the invention were distinct questions and one had no bearing over the other. Thus, it would be a flawed approach to excuse the inventorship requirement simply because the relevant invention was patentable. Also, an AI, unlike a natural person, would not require motivation to innovate, thereby disentitling AI from being mentioned as an inventor in a patent application. The Commissioner contended that any determination under Section 15(1)(b) and Section 15(1)(c) could only be done upon ascertaining true and first inventor. Since, Dr. Thaler had failed to illustrate this requirement, he could not obtain title to the patent from DABUS. It was fallacious to suppose that

[79] [2001] FCA 501

[80] *Thaler v. Commissioner of Patents* [2021] FCA 879

[81] [2022] FCAFC 62, See also See also *Cornish v. Keene* [1835] 1 WPC 501, "*Sometimes it is a material question to determine whether the party who got the patent was the real and original inventor or not; because these patents are granted as a reward, not only for the benefit conferred upon the public by the discovery, but also to the ingenuity of the first inventor… although the public had the benefit of it, it would be an important question whether he was the first and original inventor of it.*"

including AI within the meaning of inventor would promote technological innovation under Section 2A of the Act as Dr. Thaler had not adduced sufficient evidence to back up his assertion. Lastly, the Commissioner contended that extending the meaning of 'inventor' to AI would be incompatible with the notion of a 'person ordinarily skilled in art' used to determine the non-obviousness of an invention under Sections 172 and 182 of the Act. Dr. Thaler contended that the requirements under Section 15(1)(b) and Section 15(1)(c) were alternative in nature and thus the Commissioner ought to disprove entitlement to the patent specifically instead of relying of Section 15(1)(a). Relying on the law of equitable confidentiality, Dr. Thaler argued that any inventions created by DABUS were automatically owned by him as the legitimate owner of DABUS. Since the possession of invention is a vital requirement of owing the patent in such invention, the possession of DABUS' invention by Dr. Thaler was the perfect proof of the fact that he alone was entitled to own the patent in any resulting invention. The possession leads to 'derivation' (meaning 'received, obtained, got, gain or obtain or acquired') of the invention which is a broader concept than a simple assignment. Upon perusal of the rival contentions, the Full Federal Court ruled that the application by Dr. Thaler was violative of Section 15 of the Patents Act, 1990, read with Reg 3.2C(2)(aa) of the Patent Regulations 1991, for failing to mention a natural person as an inventor for a successful grant of the patent. Relying upon, *Alcan (NT) Alumina Pty Ltd v. Commissioner of Territory Revenue (Northern Territory)*[82] the court held that while policy statement may provide secondary guidance, the primary method of ascertaining the true meaning of a statutory provision requires reference to the plain, natural and ordinary meaning of the language of the law. The court reiterated the importance of ascertainment of inventor in the process of granting a patent by referring to the English cases of *Marsden v. The Saville Street Foundry* and *Engineering Co Ltd*[83] and *Clothworkers of Ipswich Case*[84]. The important premise which can be deduced from these decisions is that the identity of the inventor plays a crucial part in the grant of the patent. Even in those

[82] [2009] HCA 41
[83] (1878) 3 Ex D 203 at 206-207
[84] (1615) Godb 252

cases where the patent was granted to a person who imported it into England, it was to reward a person would have taken great risks in travelling to a foreign country and then bringing it to England.

Even in Australia, *Tate v. Haskins*[85] relied on the observations of Abbott CJ in *R v. Wheeler*[86] and noted that:

"…*if the patentee has not invented the matter or thing of which he represents himself to be the inventor, the consideration of the Royal grant fails, and the grant consequently becomes void*."

Any valid application for a patent should primarily be filed by the person who has made the invention.[87] The same position was also reflected in Section 34(1) of the Patents Act, 1952, which predicated the validity of the patent application on such application being filed either by the actual inventor or a person deriving entitlement from that actual inventor. In case of a non-inventor applicant, an assignment had to be proved between the actual inventor and the patentee. The provisions of the 1952 Act made it amply clear that only a legal person could be the recipient of the right to apply from the original inventor.

The Full Federal Court observed that an inventor must make a material contribution to the inventive concept An AI, unlike a natural person could not be motivated by the reward of a patent for making or actually devising the process or product.[88] The fact that inventorship constitutes a ground for revocation of patent under Section 138(3)(a) of the Act highlights the importance of identification of inventor in deciding the validity of the patent. The concerned invention must be attributed to the ingenuity of the original inventor which is not possible in case of an AI. The conception of an invention and its execution is only possible through the mind of a natural person. In *D'Arcy v. Myriad Genetics Inc*.[89], the Australian High Court had similarly observed that an invention could be only brought about by human action. The grant of a patent is considered as a 'reward for human ingenuity'.

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[85] [1935] HCA 40
[86] (1819) 2 B & Ald. 345 at pp. 349-351
[87] *Dunlop v. Cooper*, [1908] HCA 67
[88] *University of Western Australia v. Gray*, [2009] FCAFC 116
[89] (2015) 258 CLR 334

In support of its views, the court also quoted the following passage from Explanatory Memorandum to the Patents Bill 1989:

"*Broadly, a patent may be granted only to the inventor of the invention concerned or to a person deriving rights from the inventor*."

Lastly, the court held that Dr. Thaler could not own DABUS' invention as an applicant because the transfer of ownership from the inventor to the applicant requires a legal relationship between the inventor and assignee which is not possible in case of an AI. An AI after all does not possess the capability to enter into a contract with its creator to transfer rights in the invention to him/her. The clauses under Section 15(1) could not be considered in isolation as that would violate the fundamental scheme of the Act and Regulation 3.2C(2)(aa). The court clarified that the reason to disqualify DABUS as the inventor was purely an exercise in statutory construction rather than an attempt to inform the policy of law regarding the status as of AI as an inventor in patents. While, it was conceded that the issue was in serious need of being addressed by the law and policy makers, the judiciary was not the appropriate forum to come up with the solution. The Federal Court pointed out the following issues which would require clarity:

a. Whether the current status of AI as a form of technology merits inclusion as an inventor under patent laws.
b. Whether law must exempt AI from assignment requirement where the ownership is claimed by the applicant.
c. Whether the ownership should vest with the owner of the programme, sponsor of the programme or the programmer who owns copyright in the programme running the AI.
d. Whether inclusion of AI as an inventor would require a review of the standard of non-obviousness by re-examination of the notion of 'person ordinarily skilled in the art'.[90]

[90] *Ibid*, Para. 112-113 and 121

A similar fate also met DABUS in New Zealand where Application 776029 was rejected by the Examiner who raised an objection to listing a non-natural person as the inventor. While scrutinizing PCT Application No. PCT/IB2019/057809 (New Zealand), Assistant Commissioner Luiten observed that:

"*So far as I have been able to verify, no creatures on earth other than human beings ever seem to have invented a patentable invention and we have never received any disclosure of inventions from other worlds*."[91]

The lack of clarity and uniformity in the global intellectual property regime may be best illustrated by referring to the recent decision of South Africa's Companies and Intellectual Property Commission on June 24, 2021, to grant the patent sought by Dr. Thaler by naming DABUS as the inventor. Though hailed as a seminal moment in the history of intellectual property rights by various scholars and commentators, the decision must be taken with a pinch of salt. The extent of formal patent examination is far from rigorous. Any application with the duly filled in paperwork is almost guaranteed a grant of patent under the PCT framework. Such a determination by the local patent office could be easily overturned by third party opposition based on lack of novelty, inventiveness or identification of inventor resulting in revocation of the patent by the Court of the Commissioner of Patents.[92] Despite the recent developments in jurisdictions like Australia and South Africa, concerns remain on the wider acceptance of AI within the legal framework. The grant by the South African authority was influenced more by compliance with Patent Cooperation Treaty and proper documentation of claim under a formalities examination rather than substantive elements of the application.[93]

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[91] *Stephen L. Thaler* [2022] NZIPOPAT 2 (January 31, 2022); See also Chris Wilkinson, New Zealand: AIs are not people! NZ Patent Office decides AIs cannot be inventors (and neither can aliens), https://www.mondaq.com/newzealand/patent/1170006/ais-are-not-people-nz-patent-office-decides-ais-cannot-be-inventors-and-neither-can-aliens

[92] See Alistair Maughan and Anna Yuan, AI As A Patent Inventor – An Update From South Africa and Australia, https://www.jdsupra.com/legalnews/ai-as-a-patent-inventor-an-update-from-2776042

[93] *Stephen L. Thaler, DABUS – The invention was autonomously generated by an artificial intelligence*, Application No. 2021/03242.22:13/05/2021.43:6/24/2021, https://iponline.cipc.co.za/Publications/PublishedJournals/E_Journal_July%202021%20Part%202.pdf; See IPWatchdog,

Equally interesting is the grant of copyright (ROC No. A-135120/2020) to RAGHAV, the graphics and visualization app developed by Mr. Raghav Gupta. Though the first application filed by Mr. Ankit Sahni was rejected on the ground of mention of AI as the sole author, the subsequent application with the AI mentioned as the joint author, succeeded in obtaining the copyright on November 2, 2020. Mr. Sahni also registered himself as the owner of the artwork 'Suryast' generated by the AI as a commissioned work.[94] The grant remains questionable because authorship is an essential condition for authorship. If it's a commissioned work, it would require a contract between the two parties under the work for hire doctrine to prove the basis for Mr. Sahni's ownership. Thus, the recent development of the Copyright Office sending a withdrawal notice on November 25, 2021, to Mr. Sahni seeking clarification on the legal status of RAGHAV does not come as a surprise.[95]

DABUS Gets Its First Patent in South Africa Under Formalities Examination, https://www.ipwatchdog.com/2021/07/29/dabus-gets-first-patent-south-africa-formalities-examination/id=136116/

[94] Kristél Kriel and Adam Lakusta, Can A Robot's Artwork Be Copyrighted? https://www.mondaq.com/canada/copyright/1219038/can-a-robot39s-artwork-be-copyrighted?login=true&debug-domain=.mondaq.com; See also https://www.leadip.io/post/artificial-intelligence-is-recognized-as-an-author-for-ai-artwork-ip-news

[95] *Suryast* (Applicant - Ankit Sahni), ROC A-135120/2020, Diary No. 13646/2020-CO/A, Searchable at https://copyright.gov.in/SearchRoc.aspx;

American University Intellectual Property Brief, http://www.ipbrief.net/2022/03/24/the-raghav-issue-should-ai-be-granted-authorship-rights/;

See also Sukanya Sarkar, Exclusive: Indian Copyright Office issues withdrawal notice to AI co-author, https://www.managingip.com/article/2a5d0jj2zjo7fajsjwwlc/exclusive-indian-copyright-office-issues-withdrawal-notice-to-ai-co-author