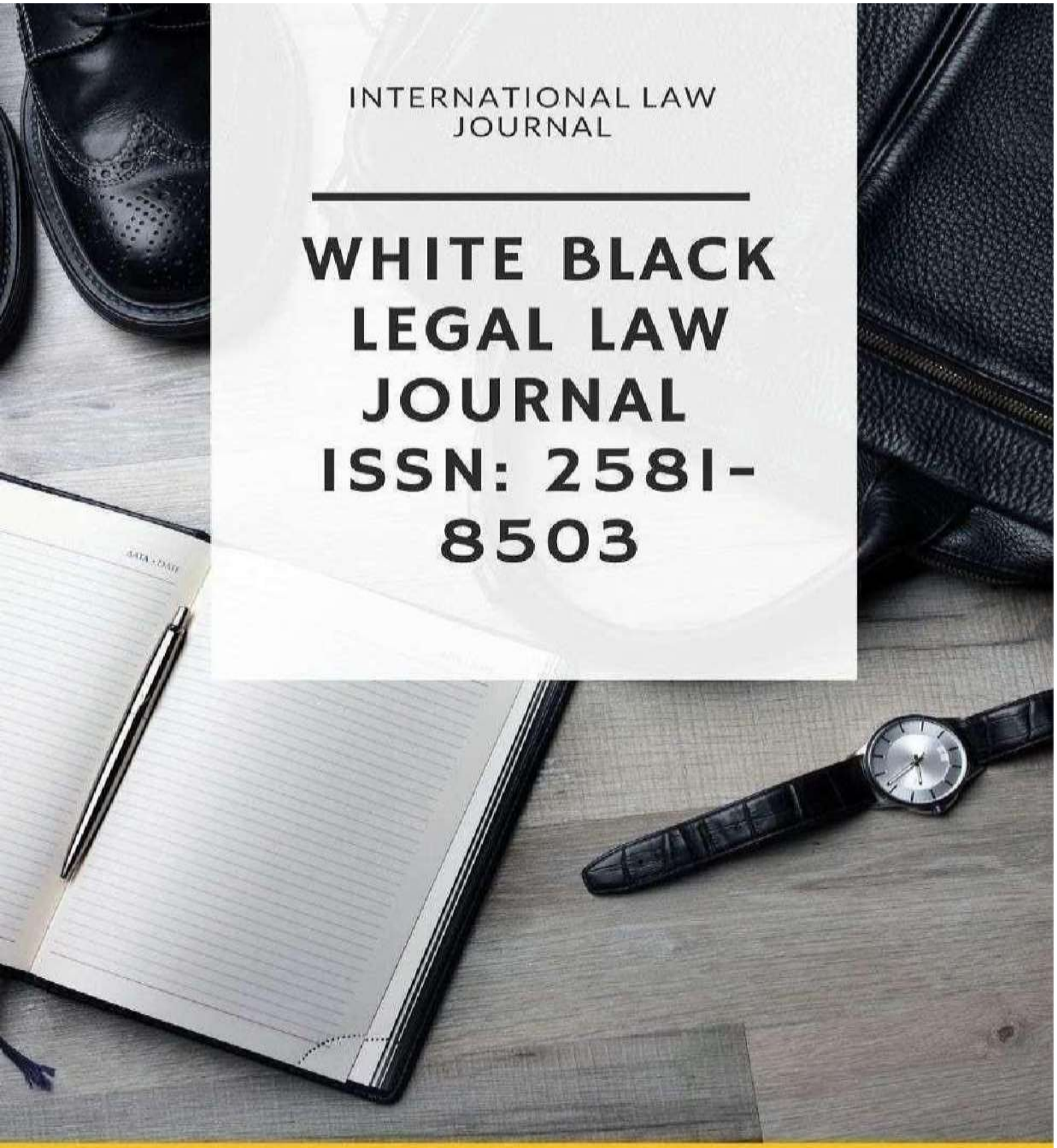

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PATENT LAW IN INDIA AND ITS INTERACTION WITH ARTIFICIAL INTELLIGENCE AND BIG DATA

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Some guidance and scholarly discussions on AI's effects on copyright law have taken place. For example, in the wake of a court decision involving a selfie-taking monkey, the United States Copyright Office updated its interpretation of "authorship" in 2016 to clarify that it would not register works produced by a *machine* or a mere mechanical process that operates randomly or automatically. It stressed that copyright law only protects "the fruits of intellectual labor" that are "founded in the creative powers of the mind".[1] However, no such guidance has been provided and much less dialogue has taken place regarding the repercussions of AI on US patent law. And, in the face of AI's rapid technological changes and societal effects, further discussions on AI's patent law implications are paramount to facilitate any necessary changes in the US patent system so that it can continue to achieve its main objectives and help avoid negative social, economic and ethical effects.

The patent subject-matter eligibility standard for AI

Before exploring truly "disrupted" and less explored patent topics, such as the patentability of inventions created by AI, this White Paper addresses the current, hotly debated topic of patent subject-matter eligibility for software, particularly for AI software. Although an increasing number of AI patents are being issued in the United States,[2] the present legal framework on patentable subject matter became more stringent in 2014 and poses heightened challenges for patent applicants in obtaining AI patents. Given that AI could have much greater impact on society than "non-intelligent" software, more discussions are needed on the elevated standard's impact on innovation, ethics and the economy. After all, as warned by Justice

[1] Julia Dickenson, Alex Morgan and Birgit Clark, "Creative machines: ownership of copyright in content created by artificial intelligence applications",European Intellect. Prop. R. 39(8), 457 (2017).
[2] Smart Sys. Innovations, LLC v. Chicago Transit Auth., 873 F.3d 1364, 1378 (Fed. Cir. 2017) (Linn, J., dissenting and concurring in part).

Richard Linn of the United States Court of Appeals for the Federal Circuit (hereinafter Federal Circuit), the "danger of getting the answers to these questions wrong is greatest for some of today's most important inventions", such as in computing and in AI.

Legal framework for the patentability of "AI patents"

Title 35 of the United States Code, Section 101 (hereinafter 35 U.S.C. § 101) limits patentable subject matter to "new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof". Patent claims that are directed to abstract ideas (e.g. a mathematical algorithm), natural phenomena or laws of nature are not eligible for patent protection;88 the Supreme Court of the United States explained that "they are the basic tools of scientific and technological work," and that granting monopolies on those tools through patent rights might impede innovation.[3]

The Supreme Court, in *Alice Corporation Pty. Ltd. v. CLS Bank International*,[4] recently made it more challenging for applicants to obtain patents on software or "computer-implemented inventions". The seminal *Alice* decision has been interpreted and applied by the Federal Circuit and various lower federal district courts to generally exclude patent claims directed to subject matter that could be performed through an "ordinary mental process", "in the human mind" or by "a human using a pen and paper", with the limited exception for claims that specifically provide ways to achieve technological improvements over the tasks previously performed by people (e.g. containing an "inventive concept").

This aspect of *Alice*'s legal framework creates tension with AI patents because the goal of AI is often to replicate human activity.94 For example, in *Purepredictive, Inc. v. H20.AI, Inc.*, the United States District Court for the Northern District of California held that the asserted claims of US Patent No. 8,880,446 covering AI-driven predictive analytics95 were "directed to a mental process and the abstract concept of using mathematical algorithms to perform predictive analytics".96 After further finding that the patent's claims "do not make a specific improvement on an existing computer-related technology", the court invalidated the claims for being directed to patent-ineligible subject matter.

Similarly, in *Blue Spike, LLC v. Google Inc.*, applying the *Alice* test, the court held that the patent claims covered a general purpose computer implementation of "an abstract idea long undertaken within the human mind" because they sought to model "the highly effective ability

[3] Robert P. Merges, Peter S. Menell and Mark A. Lemley, *Intellectual Property in the New Technological Age* (Vicki Been et al. eds, 6th ed., 2012) (citing Mayo Collaborative Servs. v. Prometheus Lab., Inc., 566 U.S. 66 (2012)).
[4] Alice Corp. v. CLS Bank Int'l, 134 S. Ct. 2347, 2355 (2014)

of humans to identify and recognize a signal" on a computer.[5] After further finding that the claims merely covered "a wide range of comparisons that humans can, and indeed, have undertaken since time immemorial" – and thus lacking any "inventive concept" – the court held that the claims were invalid.[6] This trend has made it more challenging for patent applicants to obtain AI patents during prosecution or for patent owners to defend the validity of their patents during litigation.

Discussion points on the present legal standard

Discussions need to address whether the present subject- matter patentability standard promotes the main objectives of US patent law. For example, whether the present standard promotes or stifles innovative technologies relating to AI is an important question. Many have argued that patents provide incentives for innovation, investment and invention, and that awarding patent rights to software can encourage investment in software-related research and further promote innovation.

This argument would apply analogously to AI, but the case for innovation may be stronger, given the greater potential of AI than general software. Others have argued that patents on software stifle innovation. Some have suggested that patents should not be awarded to any software,103 whereas others have proposed awarding shorter patent terms to software patents.104 And, as discussed above, the courts often hold that patent claims mimicking or replicating human activity lack any "inventive concept". These differing perspectives must be sufficiently considered to determine whether AI patents in fact promote innovation, or whether those technologies are better protected through other means (e.g. laws on trade secrets or copyrights). Similar conversations are needed for the other objectives of patent law. For example, the relevant actors should assess whether the present standard promotes the disclosure and dissemination of useful information and whether it incentivizes people to create new inventions.

The discussions should also account for AI-specific factors as opposed to broader software-specific considerations when assessing whether incentivizing AI through patent rights may have different or greater economic, social and ethical impact than incentivizing general software. For example, many have expressed concern that AI could make much of human

[5] Blue Spike, LLC v. Google Inc., No. 14-CV01650-YGR, 2015 U.S. Dist. LEXIS 119382, at *13-16 (N.D. Cal. 8 September 2015), aff'd in Spike v. Google Inc., No. 2016-1054, 2016 U.S. App. LEXIS 20371 (Fed. Cir. 2016).
[6] Daniel F. Spulber, "How Patents Provide the Foundation of the Market for Inventions", Northwestern Law & Econ. Research Paper No. 14-14 (26June 2014),

employment redundant, 106 having more profound negative economic effects than prior technological changes. Others believe that AI's overall economic impact will not be very different from those of previous technological advances.107 But even if that were true, some still find it troublesome because they believe that recent technological changes have contributed to increasing inequality and falling labour force participation.108 Still others advocate that AI should be further promoted to facilitate making ground breaking discoveries, which will raise productivity growth and improve the lives of people worldwide, thereby overcoming any negative impact of AI on employment and inequality.109 Also, if the legal standard is lowered, would companies that are leading filers of AI patents gain unfair advantages? Given that AI may be able to generate further inventive ideas on its own (which general software is unable to do), the first-mover advantage for those owners of AI patents may be much greater than that of general software patents.

Some believe that this will result in those first-movers having "too much power, if we don't begin to update patent law now". This may exacerbate the existing risks of AI-induced wage gaps and economic inequality.

How to implement legal changes to maximize the social and ethical benefits from AI should also be explored, to the extent that any patent law adjustments are deemed necessary. Lowering the subject-matter patentability standard for AI inventions relating to areas deemed more socially beneficial, such as healthcare, the environment, criminal justice and education, 112 might be one way to help balance promoting innovation with mitigating ethical concerns. These issues must be carefully examined by the relevant actors to ensure US patent law evolves to strike an optimal balance between the various competing objectives.

Patentability and inventorship issues for AI-generated inventions

The patentability of inventions *created* by AI, as discussed in this subsection, is a different topic from and should not be confused with patentability of inventions *directed* to AI technologies, which is discussed in the preceding subsection. The questions explored here are whether AI-created ideas, which otherwise would be deemed "inventive" had they been conceived by people, should be protected by the patent law system, and if so, who should be awarded inventorship for such AI-generated inventions. The urgent need to address these questions is underlined by instances of patents already being issued for AI-produced inventions, such as those for ideas from the Invention Machine and the Creativity Machine.

1. Legal considerations for patentability and inventorship for AI

The Indian patent regime, as governed by the Patents Act, 1970, is structured to promote innovation while ensuring that the benefits of technological advancement are ultimately accessible to the public. At its core, the patent system seeks to strike a balance between incentivising inventors through the grant of exclusive rights and preventing undue monopolisation of knowledge. However, this framework has historically been developed on the foundational assumption that inventions are the product of human intellect, skill, and ingenuity—an assumption that is increasingly being tested in the era of artificial intelligence. Under Section 2(1)(j) of the Act, an "invention" is defined as a new product or process involving an inventive step and capable of industrial application. These three criteria—novelty, inventive step, and industrial applicability—constitute the essential thresholds for patentability in India. The requirement of inventive step, as further elaborated under Section 2(1)(ja), necessitates a technical advancement or economic significance that is not obvious to a person skilled in the art. This standard is inherently anthropocentric, as it relies upon a hypothetical human benchmark to evaluate inventiveness. The increasing role of artificial intelligence in generating technical solutions challenges this premise, as the inventive contribution may no longer be directly attributable to human reasoning alone.

The statutory scheme is further complicated by the exclusions contained under Section 3 of the Act, particularly Section 3(k), which denies patent protection to "computer program per se." Given that artificial intelligence systems fundamentally operate through algorithms, computational models, and data-driven processes, the applicability of this exclusion to AI-based inventions remains a subject of considerable ambiguity. While Indian patent practice has gradually evolved to recognise computer-related inventions that demonstrate a technical effect or technical advancement, the absence of clear legislative or judicial guidance on AI-generated inventions leaves significant interpretative uncertainty.

The emergence of artificial intelligence thus exposes a structural limitation within the Indian patent framework. AI systems are now capable of autonomously generating solutions, optimising industrial processes, and even contributing to the design of novel products. In such circumstances, the traditional criteria of patentability become difficult to apply with precision. The assessment of novelty may be complicated by the vast datasets used in training AI models, while the determination of inventive step becomes problematic when the inventive process is not transparently linked to human intellectual effort.

A more complex issue arises in relation to inventorship. Although the Patents Act does not provide an explicit definition of "inventor" that addresses artificial intelligence, the procedural

and substantive provisions of the Act clearly presuppose that the inventor is a natural person. Requirements such as the declaration of inventorship and the attribution of rights are inherently premised on human agency. Consequently, in cases where an invention is generated with minimal or no human intervention, identifying the rightful inventor—whether it be the developer of the AI system, the user, or another stakeholder—becomes a matter of legal ambiguity and doctrinal inconsistency.

The integration of big data into artificial intelligence systems further intensifies these challenges. AI-driven innovation is heavily dependent on large datasets, which are used to train models and enhance predictive capabilities. This raises fundamental questions regarding the locus of innovation: whether the inventive contribution lies in the algorithm, the dataset, the training process, or the synergistic interaction between these elements. Such complexities render the application of traditional patent law principles increasingly uncertain and potentially inadequate.

At present, the Indian legal framework does not offer definitive answers to these emerging issues. There is a notable absence of judicial precedent directly addressing AI-generated inventions, and legislative provisions remain silent on the status of artificial intelligence within the patent system. While comparative jurisdictions have begun to engage with these questions, the Indian position continues to evolve in a fragmented and uncertain manner.

This growing disconnect between technological capability and legal regulation underscores the need for a critical re-examination of the existing patent framework in India. Without clear and coherent guidelines addressing patentability, inventorship, and ownership in the context of artificial intelligence, the objectives of patent law—namely, the promotion of innovation and the dissemination of knowledge—may be undermined. It is therefore imperative to interpret and, where necessary, reform the current legal framework to ensure that it remains responsive to the realities of AI-driven innovation while preserving its foundational principles.

Discussion points on patentability

The patent-eligibility issue for AI-generated inventions must be explored in the context of whether patents on AI-generated inventions would further the patent law system's main objectives. Some have argued that granting patent rights to AI-generated inventions would accelerate innovation, even enabling advances that would not have been possible through human ingenuity alone.[7] Others have argued that patent rights do not promote innovation,

[7] Burroughs Wellcome Co. v. Barr Labs., Inc., 40 F.3d 1223, 1227-28 (Fed. Cir. 1994).

irrespective of whether inventions are generated by people or AI. Under this view, more patents, resulting from AI-generated inventions, will increase social costs and monopolies, and stifle the entry of new ventures, thereby hampering innovation. China's New Generation Artificial Intelligence Development Plan includes language that calls for promoting "the innovation of AI intellectual property rights", which some could interpret as encouraging recognition of IP rights for AI-generated works (although no mention is made of promoting AI as inventors).

Some point out that, even if patents on AI-generated inventions ultimately promote innovation, those patents may "negatively impact future human innovation as supplanting human invention with autonomous algorithms could result in the atrophy of human intelligence". The concern is that reduced inventive talent could lead to the elimination of high-quality research and development (R&D) jobs or entire R&D-intensive industries. Others even argue that the notion of awarding patent protection on AI-generated inventions should be abolished altogether. In their view, alternative tools, such as first-mover advantage and social recognition of AIs, as well as alternative technologies that prevent infringement of patent rights, can better lead to innovations and public disclosure of inventions. These competing views must be carefully considered to determine the overall net impact on innovation from granting patent rights to AI-generated inventions. Each of the patent law system's other main objectives requires attention, such as assessing whether patents on AI-generated inventions would promote the dissemination of information or incentivize the right "beings" to create inventions148 that will help the system remain effective.[8]

Further, the discussions must identify possible "middle grounds" to help balance the competing objectives and factors. For example, one could consider raising the patentability standard (e.g. on nonobviousness) for inventions created solely by AI, which would level the playing field to some extent between human inventors and AI. In this way, a middle ground may be provided between promoting innovation and continuing to incentivize people to invent. A similar balance may be achieved by granting different patent periods based on the level of human involvement in the inventive process. In these scenarios, discussions must also address mechanisms to ensure that patent applicants are not being untruthful about AI's involvement in the inventive process to circumvent the law.

Balancing the patent law's objectives to promote social, economic and ethical responsibility

[8] Burroughs Wellcome Co. v. Barr Labs., Inc., 40 F.3d 1223, 1227-28 (Fed. Cir. 1994).

is another area for discussion.[9] One possibility for promoting innovation in an ethically sound way could be to raise the utility requirement for AI inventions under 35 U.S.C. § 101, which requires that the invention be *useful* to be patentable. Although the bar for utility is set relatively low today, the doctrine of *moral* utility was often invoked in the late 19th century to deny patents on gambling devices.[10] Analogously, there may be grounds for raising the bar for utility just for AI-generated inventions, so that only the truly "useful" inventions by AI would be eligible for patent rights. Another possibility is to protect only certain types of AI-generated inventions deemed as having greater social benefits, such as those relating to healthcare, the environment, criminal justice and education.156 Or perhaps the obviousness standard could be raised for just the AI-generated inventions not directed to one of those with "greater social benefits".

The possible solutions cannot lose sight of the human responsibility for AI,157 because completely undirected, unsupervised innovations by AIs without human oversight can have negative, unintended consequences.158 Discussions must sufficiently address how such human responsibility can be provided159 and seek ways to promote transparency and accountability in AI.

Discussion points on inventorship

If inventions generated entirely by AI become eligible for patent rights,160 the next question to address is who should be listed as the inventor. As discussed in Section III.B.1, the current law requires *conception* or "the formation in the mind of the inventor, of a definite and permanent idea of the complete and operative invention" for there to be an invention. Thus, if all the conception takes place in the "mind" of an AI, then there would be no person to list as the inventor under the present law.[11] This presents two main options: (1) list AI as the inventor; or (2) list no inventors on the face of the patent.

Some argue that if AI's work "is indeed inventive, then both treating computational inventions as patentable and recognizing [AI] as an inventor would be consistent with the constitutional rationale for patent protection". But to do so would require the recognition of AI as a *legal entity* or a *legal person,* which is not available under current US law. Nevertheless, the general

[9] Nicolas Petit, "Law and Regulation of Artificial Intelligence and Robots: Conceptual Framework and Normative Implications", at 19 (9 March 2017)

[10] Ben Allgrove, "Legal Personality for Artificial Intellects: Pragmatic Solution or Science Fiction?" (June 2004) (Master of Philosophy thesis, Univer- sity of Oxford)

[11] Gabriel Hallevy, "AI v. IP: Criminal Liability for Intellectual Property IP Offenses of Artificial Intelligence AI Entities" (17 November 2015)

definition of a "legal person," which is "a subject of legal rights and obligations", is likely broad enough to encompass AI as long as AI's role as an inventor is subject to legal rights and obligations. Legal personhood and inventorship status are thus theoretically possible for AI if the legislature is willing to grant them. But it is important to assess whether granting inventorship would provide any benefits for the patent system. For example, except for AGI or superintelligent AI that has true *consciousness* (which does not exist today), AI "would not be motivated by the prospect of a patent"[12] and can continue to generate inventive ideas without any incentivizing through inventorship (like the Invention Machine and Creativity Machine).168 Would there be any meaningful benefits in recognizing AI as inventors beyond those provided by allowing AI-created inventions to be patentable?

This leads to the second option of not listing any inventor. Although an inventor must be listed under the current law, the patent system can be adapted to award patents to AI's inventions without listing one.169 In this scenario, however, sufficient incentives must be provided to the people involved in creating and maintaining the AI that generates inventive ideas, so that they will be motivated to continue developing such inventive AI. Given that the AI's owner will likely be listed as the resulting patent's assignee, the current patent system probably addresses the owner's interests adequately without additional recognition as an "inventor". But the interests of AI's developers (e.g. individual engineers), who are not given any credit on the face of the patent, may not be addressed sufficiently. If this inadequacy grows and obstructs innovation, a new category may need to be created for developers so that their contributions are acknowledged on the face of the patent.

Whether the decision ultimately comes down to listing AI as the inventor or not listing any inventor, the discussions must sufficiently consider the decision's likely effects on innovation and its economic and ethical repercussions.

Liability issues for patent infringement by AI

Another important patent law issue that will likely be disrupted by AI relates to liability in cases where AI is the violator of patent rights, given that most AIs now have the technological capacity to infringe patent claims.170 Similar to the above discussion on AI as the inventor, the liability issue raises the question of who should be held responsible for actions taken by

[12] Bridget Watson, "A Mind of Its Own – Direct Infringement by Users of Artificial Intelligence Systems", IDEA 58(1), 65, 69 (2017); accord. Kahana, *supra* note 34, at 2; see also Yanisky-Ravid, *supra* note 146, at 43 ("As with inventorship, existing laws and precedent appear to rule out a machine or program as infringer."); Institute for Globalization and International Regulation, "Artificial intelligence (AI) and intellectual property (IP), a call for ac- tion", Maastricht Univ. Blog (11 October 2017)

AI – the end user, the developer or AI itself171 – as well as the related question of how to assess liability.

Patent rights in India include the exclusive right of the patentee to prevent third parties from making, using, offering for sale, selling, or importing the patented invention without authorisation. This right is recognised under the Patents Act, 1970, which provides the patentee with legal remedies in cases of infringement. Infringement occurs when a person, without the consent of the patentee, performs any act that falls within the scope of the patented claims during the term of the patent. The determination of infringement generally involves a two-step analysis: first, interpreting the scope and meaning of the patent claims; and second, examining whether the alleged infringing product or process falls within those claims, either literally or through the doctrine of equivalents.

Under Indian law, remedies for patent infringement are provided under Section 108 of the Patents Act, which includes relief in the form of injunctions, damages, or an account of profits. The courts may also grant interim injunctions to prevent ongoing infringement and preserve the rights of the patentee. Although the Act does not explicitly recognise concepts such as "induced infringement" in the same manner as the United States, Indian courts have, through judicial interpretation, acknowledged contributory liability in certain circumstances where a party knowingly facilitates infringement.

However, the application of these principles becomes significantly complex in the context of artificial intelligence. The existing Indian legal framework does not expressly address situations where patent infringement may occur through the actions of autonomous or semi-autonomous AI systems. Similar to other jurisdictions, Indian law implicitly assumes human involvement in infringing acts, and liability is typically attributed to identifiable human actors such as manufacturers, developers, operators, or users of the technology.

In cases involving AI-driven systems, determining liability becomes challenging, particularly where the infringing act is the result of independent machine learning processes rather than direct human control. For instance, if an AI system autonomously performs a process that infringes a patented invention, it becomes difficult to identify the responsible party within the traditional framework of patent law. The developer may argue lack of control, while the user may claim lack of knowledge regarding the system's internal functioning.

Although Indian jurisprudence has not yet directly addressed patent infringement by artificial intelligence, guidance may be drawn from international developments. For example, discussions in instruments such as the European Parliament Resolution on Civil Law Rules on Robotics suggest that, at present, liability for AI-related harm should be traced back to a

human agent who had the capacity to foresee and prevent such actions. However, as AI systems become increasingly autonomous, the adequacy of existing liability principles may come into question.

Thus, the rise of artificial intelligence exposes a critical gap in the Indian patent law framework concerning infringement and liability. The absence of clear statutory provisions or judicial guidelines creates uncertainty in determining responsibility for AI-driven infringement. This highlights the need for developing a more nuanced legal approach that can effectively address the complexities arising from autonomous technologies while ensuring that the rights of patent holders are adequately protected.

Discussion points on patent infringement liability

The view that patent infringement by humans or AI should be deterred is likely not controversial. Moreover, failing to hold "someone" liable for patent infringement by AI will likely encourage using AI for infringement. But more discussions on *how* to handle patent infringements by AI are required, such as on *who* should be held liable184 and on how liability should be assessed. The answers must promote the patent law system's main objectives, as well as maximize the social, economic and ethical benefits.

The European Parliament Resolution "at least at the present stage" advocates holding a person responsible rather than an AI.185 As to which human actor to hold liable, one possibility would be the AI's end users; as noted in the Resolution, the "rules governing liability for harmful actions – where the user of a product is liable for a behaviour that leads to harm" could apply to damages caused by AI.[13] This can create uncertainty among software users, however, and may lead to their disuse of otherwise helpful AI. It would also be unfair in many instances, given that end users often cannot foresee the patent infringement, especially if they are individuals and not sophisticated corporations. Patent owners sue the companies that develop and/or sell the products much more frequently than the end users of those products, and even in those cases where the end users are sued and held liable, they are often indemnified by the products' manufacturers.

This leads to the other option of holding the developer or manufacturer of AI accountable. Holding a product's manufacturer liable for patent infringement is common practice in patent litigation. This may be suitable in the AI context as well because the developers ultimately create the AI (that infringes the patent), are usually in a relatively better position to foresee

[13] Gaia Bernstein, "The Rise of the End User in Patent Litigation", B.C.L. Rev. 55(5) (2014), 1443

the infringement than the end users, and have likely derived economic value from the AI (e.g. selling AI to the end users). The manufacturer may also be held liable in the context of product liability, "where the producer of a product is liable for a malfunction",191 as provided in the resolution. In this case, AI's infringing act would have to be analogized to the product "malfunction".

Even so, with truly autonomous AI, can a human agent really anticipate against or properly oversee the AI to avoid infringement? Would holding people liable for unforeseeable acts deter AI's development and use because of people's fears of being held liable for unexpected patent infringement, and therefore hinder innovation? Thus, for truly autonomous AI, the traditional rules may "not suffice to give rise to legal liability for damage caused by a robot, since they would not make it possible to identify the party responsible for providing compensation and to require that party to make good the damage it has caused".

So, how should liability for patent infringement by truly autonomous AI be handled? One possibility, as suggested in the European Parliament Resolution, "could be an obligatory insurance scheme, as is already the case, for instance, with cars", although the insurance system for AI would have to account for all potential responsibilities in the chain (instead of just people's actions, as in car insurance systems). The resolution also raises the possibility of supplementing such an obligatory insurance system with a *fund* to ensure that reparation can be made for damages where no insurance coverage exists.

Another option would be to hold the AI itself liable, which would require recognizing AI as a *legal person* (or legal entity).195 As explored in Section III.B.3, the definition of a legal person is likely broad enough to include AI. In addition, there may be greater incentives in granting legal personality to AI in the context of determining liability than in the context of awarding inventorship.[14] The European Parliament Resolution recognizes this possible need for AI personhood in considering liability for damages caused by AI: "creating a specific legal status for robots in the long run, so that at least the most sophisticated autonomous robots could be established as having the status of electronic persons responsible for making good any damage they may cause, and possibly applying electronic personality to cases where robots make autonomous decisions or otherwise interact with third parties independently."

Once the entity responsible for patent infringement caused by AI is determined, careful deliberation is needed on how liability should be assessed. The European Parliament

[14] Tara Helfman, "Transatlantic Influences on American Corporate Jurisprudence: Theorizing the Corporation in the United States", Ind. J. Global Leg. Stud. 23(2), 383 (2016)

Resolution asserts that, regardless of the legal solution selected for addressing liability, the future legislative instrument should in no way restrict the type or extent of damages that may be recovered or limit the forms of compensation that may be offered to the aggrieved party, on the sole basis that the damage was caused by a *non-human* agent. If a human agent is to be held responsible, the resolution advises that "their liability should be *proportional* to the actual level of instructions given to the [AI] and of its degree of autonomy, so that the greater a[n AI's] learning capability or autonomy, and the longer a[n AI's] training, the greater the responsibility of its trainer should be". The Resolution also mentions potentially applying *strict liability* or the *risk management approach*, subject to an in-depth evaluation, although some argue that strict liability against the human developer would be misguided.200 And if AI itself were to be held liable after being given special legal status, the liability of AI may be treated analogously to how the liability of corporations is assessed for patent infringement.[15] Some are even entirely against the current liability system; they argue that a contractual solution is required instead because it provides parties with a predictable solution to liability. Under this view, parties using an AI should employ contractual terms (e.g. indemnification clauses) to best avoid liability for direct infringement by AI. These options and considerations must be assessed by weighing their social, economic and ethical implications, while striving to ensure efficient, transparent and consistent implementation of legal certainty for citizens, consumers and businesses alike.[16]

Discussion points on how to define a "person of ordinary skill in the art"

As AI becomes ubiquitous, or at least more prevalent in various industries, discussion is required on whether the present definition of a POSITA is adequate – requiring a *person* and not an automaton – or whether it should be adjusted so that it can also mean a person equipped with AI if the use of AI is common practice in that technology space. Revising the definition to encompass a person's use of AI would substantially raise the bar for non-obviousness. Setting the standard too high could prevent deserving inventions from being patented and could thus hamper innovation. On the other hand, a hurdle that is set too low can result in a flood of junk patents and in more patent cases being filed (especially by "patent trolls") against true innovators, which can impede businesses and economic growth. Some proponents for changing the POSITA definition (so that it refers to a person using AI, or even just the AI

[15] George S. Cole, "Tort Liability for Artificial Intelligence and Expert Systems", Computer L.J. 10(2), 127 (1990).
[16] Robert P. Merges, "Uncertainty and the Standard of Patentability", Berkeley Tech. L.J. 7, 1, 14 (1992).

itself)218 argue that, as "inventive" machines continue to improve and increasingly raise the bar of patentability,[17] only the most innovative technologies will become patented. But this can also result in less patents being granted on human-generated inventions, which can pose several risks as discussed in Section III.B. Moreover, if AI becomes truly superintelligent, then AI as a POSITA could also mean that all innovative activities will eventually be deemed obvious (in the "eyes" of the superintelligent AI).[18] Some even argue that traditional patent law is irrelevant, and that other, non-patent incentives should be used to provide the gatekeeping function of nonobviousness. Further discussions on these issues should identify the benefits and risks of changing the POSITA definition to allow AI participation with these differing views in mind.

Legal Implications of Big Data in AI-Driven Patent Systems

The increasing reliance on big data in artificial intelligence systems has significant implications for patent law, particularly in the context of data-driven innovation. Big data refers to the vast volume of structured and unstructured data that is generated, collected, and processed to train AI systems and improve their decision-making capabilities. In modern technological ecosystems, the effectiveness of artificial intelligence is largely dependent on the availability and utilisation of such large datasets. From a patent law perspective, the integration of big data with artificial intelligence raises fundamental questions regarding the nature and locus of innovation. Traditionally, patent law focuses on protecting technical inventions, such as processes or products. However, in AI-driven systems, innovation often emerges from the interaction between algorithms and datasets. This creates ambiguity in determining whether the inventive contribution lies in the algorithmic model, the dataset used for training, or the combined functioning of both elements.

Under the Patents Act, 1970, data as such is not considered patentable subject matter. However, when data is used in a manner that produces a technical effect or contributes to a technical solution, it may form part of a patentable invention. This creates challenges in applying traditional patentability criteria, particularly the requirement of inventive step. It becomes difficult to assess whether the innovation arises from technical ingenuity or from access to large volumes of data.

Another important issue relates to ownership and control of data. Big datasets used in AI

[17] World Intellectual Property Organization (WIPO), *WIPO Technology Trends 2019: Artificial Intelligence* (2019).
[18] Mark A. Lemley, *Faith-Based Intellectual Property*, 62 UCLA L. Rev. 1328 (2015).

systems are often proprietary, aggregated from multiple sources, or generated through user interaction. This raises complex legal questions regarding who holds rights over the underlying data and how such rights influence patent ownership. In cases where AI-generated inventions are based on datasets owned or controlled by different entities, disputes may arise concerning entitlement to patent rights.

Furthermore, the use of big data introduces concerns relating to transparency and reproducibility of inventions. Patent law requires that an invention be sufficiently disclosed so that it can be reproduced by a person skilled in the art. However, AI models trained on large datasets may function as "black boxes," making it difficult to clearly explain how a particular output or invention was generated. This lack of transparency poses challenges in meeting disclosure requirements under patent law.

The Indian legal framework currently does not provide explicit guidance on the treatment of big data in the context of patent law. While general principles of patentability can be applied, they may not adequately address the unique challenges posed by data-driven innovation. As artificial intelligence continues to evolve, the role of big data in shaping inventive processes is likely to increase, thereby necessitating a more nuanced and adaptive legal approach.

Thus, the integration of big data with artificial intelligence highlights a critical gap in the existing patent system. Without clear legal standards governing data-driven inventions, there is a risk of uncertainty in patent protection, which may hinder innovation and investment. It is therefore essential to develop a coherent legal framework that recognises the role of big data while maintaining the fundamental principles of patent law.