Revolution in Intellectual Property Rights: Artificial Intelligence as the Inventor of a Patent

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Abstract

The inevitability of the Exponential Development of Man-Made Technology is virtually apparent. Upon entry into Society 5.0 as initiated by the Japanese Government and now the Indonesian Government, the Sophistication of Artificial Intelligence in obtaining rights equivalent to that of humans should not be taken too lightly. Over the past 20 years, all of the Fruits that Artificial Intelligence had yielded result in nothing as the Provisions under the umbrella of Intellectual Property Law do not acknowledge the Inventions that were founded by a non-human Inventor. The reason behind this is because the Patent Law offers an exhaustive list of definitions for the subject of Patent, resulting in the incapacity of Artificial Intelligences in boarding the boat of Patent Right Law on which they can be legally recognized as Inventors or even Owners of the Patent. Cognizant of the dynamic nature of Law, it is reasonable to believe that Law will adapt to the prevailing circumstances and social phenomenon. That is to say, Indonesia's Patent Law will adapt to the new challenges presented before it, one of which is the right of Artificial Intelligence in generating Inventions that are Novel, Non-obvious, and Useful and to be recognized as its Inventor.

Keywords: Artificial Intelligence; Patent; Dynamic; Inventor; Invention

A. Introduction

Prefacing this Article with the statement asserted by

Hans Kelsen, a European Legal Philosopher which says "*Law is a Science that deals not with the actual events of the world (What is) but with norms (What ought to be)*.[1] Taking that into consideration, Law should not be taken in light of the contemporary or prevailing circumstances, however, one must go further than that by conceiving the events or circumstances that are to happen. In other words, as regards to the dynamic nature of Law, any reasonable person must not only approach the world with a view to the existing laws (*Lex Lata*) but also to the future law (*Lex Ferenda*).[2] With that in mind, nobody should be of the view that the Intellectual Property Law will remain incessant, such that no alterations or changes will be offered as such view will be contradictory to the dynamic nature of Law. Considering its dynamic nature, Law as a tool to maintain order in society has shown its developing nature from time to time.[3] A good example in relation to our Intellectual Property Law is the legislative authority vested in the People's Representative Council (DPR) to revise theprovisions of Law No. 14 of 2001[4] regarding Patent so as to include several stipulations that would be in line with the current circumstances, one of which is to be more aligned with the Agreement on Trade-Related Aspects of Intellectual Property

[1] Stanley Paulson, "The Neo-Kantian Dimension of Kelsen's Pure Theory of Law," *Oxford Journal of Legal Studies* 12 (1992): 311–32.
[2] Noora Arajärvi, "Between Lex Lata and Lex Ferenda? Customary International (Criminal) Law and the Principle of Legality," *Tilburg Law Review: Journal of International and European Law* 15, no. 2 (2011): 163–83.
[3] Jimly Asshiddiqie and Muchamad Ali Safa'at, *Teori Hans Kelsen Tentang Hukum* (Jakarta: Konstitusi Press, 2006)
[4] Law No. 14 of 2001 concerning Patent

Rights (hereinafter referred to as TRIPs).[5] For that reason, Law by its nature is ever-changing and dynamic with due regard to the prevailing issues arising within the Nation.[6] An old-fashioned view of law that emphasizes the function of maintaining order in a static sense, and emphasizes the conservative nature of law, assumes that law cannot play a significant role in the reform process.[7]

Cognizant of the dynamic nature of Law, recently, there has been a ground-breaking judicial decision upheld by the Australian Federal Court in the Thaler v Commissioner of Patents [2021] FCA 879 (hereinafter referred to as Thaler) through which Judge Beach held that Artificial Intelligence (AI) can be recognized as the inventor of Patent. [8] Such a decision 8 engendered numerous controversies over the eligibility of an AI in applying for a Patent before the IPR Institution.[9] Further, a question arises out of such a decision, that is whether AIs will also be accorded rights similar to how animals and humans have rights under the Constitution, such that any harm incurred by AIs will be prohibited by the Constitution? Such a question is in and

[5] "Sosialisasi Undang-Undang Paten (Baru) Nomor 13 Tahun 2016," Khairun Nisa Fauziah, accessed December 10, 2021, https://jdih.bppt.go.id/berita/10-sosialisasi-undang-undang-paten-baru-nomor-13-tahun-2016

[6] Mochtar Kusumaatmadja, *Hukum, Masyarakat dan Pembinaan Hukum Nasional* (Bandung: Binacipta, 1995).

[7] Zulkarnain Ridlwan, "Negara Hukum Indonesia Kebalikan Nachtwachterstaat." *Fiat Justitia Jurnal Ilmu Hukum* 5, no. 2 (2012)

[8] Alexandra Jones, "Can Artificial Intelligence Be an Inventor? A Landmark Australian Court Decision Says It Can," ABC News, August 2, 2021, https://www.abc.net.au/news/2021-08-01/historic-decision-allows-ai-to-be-recognised-as-an-inventor/100339264

[9] BBC Technology News, "AI Cannot Be the Inventor of a Patent, Appeals Court Rules," BBC, September 23, 2021. https://www.bbc.com/news/technology-58668534.

of itself a Problem that must be dealt with, nonetheless, this Article will not entertain such a question as the Legal Question that will be addressed herein is the Rationae Personae of Intellectual Property Law. That is to say who can be deemed as an Inventor of a Patent. In addition to that, who will be entitled for the Patent Right? Can a Person or a Legal Person who is not the Inventor be accorded legally by the IPR Institution the Patent Right over the Invention thereof? These are questions that are going to be addressed as well. It is undeniable that AI is a non-human actor, meaning, the Indonesian Law does not acknowledge its existence as a protected Legal Entity or Person in Indonesia. As such, any invention that AI came up with cannot be given Patent pursuant to Law No. 13 of 2016 regarding Patent. [10] Turning now to the 10 general definition of AI, according to Professor Dalvinder Singh Grewal, the conventional definitions of AI only cover "the boundaries of intelligence at a mechanical level" which does not extend to the acquisition of intelligence through artificial means. For that reason, Professor Dalvinder offered a much more trailblazing and correct definition that incorporates the following aspects: 1) The term AI, 2) Actionable Knowledge, 3) Role of Knowledge of Entire Universe, 4) All Simulating Sensors with their platforms as their systems, and 5) All process-collecting, collating, interpreting, and dissemination. Such a recommended definition is: "*Artificial Intelligence is the mechanical simulation system of collecting knowledge and information and processing intelligence of the universe: (collating*

[10] Law No. 13 of 2016 concerning Patent

and interpreting) and disseminating it to the eligible in the form of actionable intelligence."[11] Following that definition, the scope of AI is not 11 merely limited to the intelligence of a machine or computer, however it also includes intelligence of the Universe, meaning AI is not limited to computers or machines. In a recently published scholarly book on Information Technology, the definition of AI offered by Professor Dalvinder is adopted, proving its significance in the world of Information Technology.[12] To put it simply, the Book, borrowing the explanation of AI provided by Romiszowski in his 1987 journal, offers a short and concise definition of AI that is "*A technology focused on improving people's well-being*."[13] Taking all of the definitions provided above into account, AI is basically a mechanical simulation that can be in the form of a computer that collects and processes knowledge of any kind on which it relies to make decisions, basis for reasoning, and other human characteristics.

Having defined AI, now this will bring us to the next question pertaining to the legal basis of AI. As to this date not even a single Law has been ratified as regards to AI,[14] Indonesia

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[11] Dalvinder Singh Grewal, "A Critical Conceptual Analysis of Definitions of Artificial Intelligence as Applicable to Computer Engineering." *IOSR Journal of Computer Engineering*, 1, 16, no. 2 (2014): 9–13.
[12] García Peñalvo and Francisco J. *Information Technology Trends for a Global and Interdisciplinary Research Community*. Hershey: IGI Global, 2021.
[13] Alexander Romiszowski, "Artificial Intelligence and Expert Systems in Education: Progress, Promise and Problems." *Australasian Journal of Educational Technology* 3, no. 1 (1987)
[14] Indra Cahya, "Indonesia Disebut Belum Siap Terapkan Kecerdasan Buatan Di Sektor Ekonomi," Merdeka.com, February 13, 2020, https://www.merdeka.com/teknologi/indonesia-disebut-belum-siap-terapkan-kecerdasan-buatan-di-sektor-ekonomi.html

or other Jurisdictions.[15] The Legal Practitioners in Indonesia are baffled and puzzled 15 by the introduction of AI into our Legal System.[16] Noting the fact that Law is dynamic and 16 ever-changing and in line with the objective of Intellectual Property Rights that is to promote economic well-being through technological innovation and the transfer or dissemination of technology as governed by Article 7 of TRIPs[17], the Legal System in Indonesia should be adaptive to the prevailing issue that is AI since the historic Australian Court Decision in 2021 has allowed the possibility of an AI to be recognized as an Inventor of its Invention[18]. Indonesian as a Civil Law country does not acknowledge the doctrine of State Decisis which allows the Judge to rely on precedents or case laws as its ultimate source of Law instead Indonesian Courts rely on the Codified Laws[19] pursuant to the hierarchy as set out in Article 7 of Law No. 12 of 2011 regarding Legislation Making[20]. Be that as it may, even if our Judicial System is not bound by the Legally Binding Decision of the Thaler case, as Australia and Indonesia are Members of TRIPs

[15] "AI Regulation: Present Situation and Future Possibilities," Jascha Galaski, accessed December 10, 2021, https://www.liberties.eu/en/stories/ai-regulation/43740

[16] "Wamenkumham: AI Sulit Dikategorikan Sebagai Subjek Hukum," Arundati Swastika Waranggani, accessed December 10, 2021, https://www.cloudcomputing.id/berita/wamenkumham-ai-sulit-dikategorikan-subjek-hukum

[17] Article 7 of TRIPs

[18] "DABUS: Decoding Australia's AI Decision," Richard Hamer, Lauren John, and Alexandra Moloney, accessed December 10, 2021, https://www.worldipreview.com/article/dabus-decoding-australia-s-ai-decision

[19] Nurul Qamar, *Perbandingan Sistem Hukum Dan Peradilan Civil Law System Dan Common Law System* (Makassar: Pustaka Refleksi, 2010)

[20] Article 7 of Law No. 12 of 2011 regarding Legislation Making

and Patent Cooperation Treaty (hereinafter referred to as PCT)[21] and the Judge of the aforementioned case referred to PCT to hold such *rationae decidendi*[22], it is in our argument that the Court's Decision will definitely affect the interpretation of Inventor pursuant to the Intellectual Property Law.

Over the past twenty years, machines have been autonomously developing patentable products and the pace of such invention will definitely increase. A number of Autonomous Computers or AIs able to generate Patentable outputs can be found throughout the past 28 years, however, the Patent Office never recognized such accomplishment and acknowledge AIs or Computers as the Inventor of the Patentable Inventions since the Owner of the AIs or Computer was the one who applied for the Patent, listing themselves as the Invention, although in reality their AIs or Computer were the true Inventors[23]. Examples of the AIs and Computers capable of generating Patentable outputs include but not limited to 1) The Creativity Machine, 2) The Invention Machine, and 3) Watson.

As regards to the Creativity Machine, in 1994, Computer Scientist named Stephen Thaler founded Creativity Machine which generates new ideas by utilizing a software concept known as artificial neural networks, which are simply collections of on/off switches that spontaneously connect to form software

[21] "The PCT now has 154 Contracting States," WIPO, accessed December 17, 2021, https://www.wipo.int/pct/en/pct_contracting_states.html
[22] Thaler v Commissioner of Patents [2021] FCA 879, ¶ 92
[23] Ryan Abbott, "I Think, Therefore I Invent: Creative Computers and the Future of Patent Law." *Boston College Law Review* 2, 57, no. 4 (2016)

without the need for human participation. Dr. Thaler compared the Creativity Machine and its processes to the human brain and consciousness and found the two artificial neural networks mimic the human brain's major cognitive circuit, namely, the thalamo-cortical loop. Surprisingly, the Creativity Machine was able to autonomously invent a Patentable Output which Dr. Thaler called Device for the Autonomous Generation of Useful Information[24]. Be that as it may, he filed the Patent Application for Creativity Machine's 24 invention under his name as the Inventor in 1998 before the United State Patent Office. In other words, a Patent for an Invention made by a non-human Inventor has transpired as early as 1998.[25]

The next example is the Invention Machine developed by Dr. John Koza which is a software modeled after the process of biological evolution, known as Genetic Programming. [26] Such Program has succeeded in autonomously generating Patentable results. Similar to Creativity Machine, the Invention Machine managed to generate not only but a number of patentable outputs. Dr. Koza through a 2006 Article in Popular Science[27] even claimed that the 27 Invention Machine has earned a Patent for developing a system to make factories more efficient.

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[24] Stephen Thaler. "Synaptic Perturbation and Consciousness." *International Journal of Machine Consciousness* 6, no. 2 (2014): 75–107.
[25] Ibid.
[26] John Koza, "Human-competitive results produced by genetic programming." *Genetic programming and evolvable machines* 11, no. 3 (2010): 251-284.
[27] "John Koza Has Built an Invention Machine: Its creations earn patents, outperform humans, and will soon fly to space. All it needs now is a few worthy challenges," Jonathon Keats, last modified April 19, 2006, https://www.popsci.com/scitech/article/2006-04/john-koza-has-built-invention-machine/

Unfortunately, Mr. Koza did not list Invention Machine as the inventor as his Legal Counsel advised him to list his team as the Inventors.[28]

Lastly, Watson is an AI produced by International Business Machines (IBM) capable of computational creativity. Watson was able to generate recipes in response to users' selection of ingredients and dishes, on that basis, Watson then created a large number of food combinations. Upon evaluating the combinations, Watson will predict the final output. [29] Although the Output was never mentioned as Patentable, however, it has been hinted that the recipe or discoveries Watson made are Patentable. [30] Based on the foregoing examples, evidently, Machines and AIs have long been inventors of outputs to which the owner thereof claims. Although, our Inventor provision clearly says that Invention is an Inventor's idea and Indonesian Law only acknowledge human Inventor (the stipulation of the Clause will be explained further below). As such, Patent System, in the words of Ryan Abbott, one of the World's leading Patent Attorneys "*isn't a good system because as technology advances we're going to move from encouraging people to invent things to encouraging people to build AI that can invent*

[28] John Koza, "Human-competitive results produced by genetic programming." *Genetic programming and evolvable machines* 11, no. 3 (2010): 255
[29] "Our Supercomputer Overlord Is Now Running a Food Truck," Maanvi Singh, last modified March 4, 2014, https://www.npr.org/sections/thesalt/2014/03/03/285326611/our-supercomputer-overlord-is-now-running-a-food-truck
[30] "Can Recipes be Patented?", Inventors Eye, accessed December 17, 2021, https://perma.cc/EN3V-9DY4

things."[31]

The types of Intellectual Property Rights as provided by Part 2 of TRIPs comprise: 1) Copyright and Related Rights, 2) Trademarks, 3) Geographical Indication, 4) Industrial Designs, 5) Patents, 6) Layout Designs of Integrated Circuits, and 7) Protection of Undisclosed Information. Of all the types provided, this Article will only be addressing Patent as an Intellectual Property Right and how an Inventor can be granted patent over its Invention, especially for AI[32]. In light of the emergence of AI for Industry 5.0 which is claimed to have autonomous operation[33] and the groundbreaking decision in favor of the Applicant, holding that AI can regarded as Inventor over its Invention[34], A Research Question arises out of that trend, that is **to what extent is an AI regarded as an Inventor of a Patented Invention?**

The approach method used in writing this Article is a normative juridical approach, namely an approach that seeks to synchronize the applicable legal provisions or other legal regulations with their relation to the application of these legal

[31] Alexandra Jones, "Can Artificial Intelligence Be an Inventor? A Landmark Australian Court Decision Says It Can,"ABC News, August 2, 2021. https://www.abc.net.au/news/2021-08-01/historic-decision-allows-ai-to-be-recognised-as-an-inventor/100339264

[32] Part 2 of TRIPs

[33] "Memasuki Era Society 5.0, Menko Airlangga Sampaikan Untuk Membangun Talenta Digital Dan Meningkatkan Literasi Digital," Kementerian Koordinator Bidang Perekonomian Republik Indonesia, accessed December 17, 2021, https://www.ekon.go.id/publikasi/detail/3397/memasuki-era-society-50-menko-airlangga-sampaikan-untuk-membangun-talenta-digital-dan-meningkatkan-literasi-digital

[34] "Australian Court Says That AI Can Be an Inventor: What Does It Mean for Authors?", Rita Matulionyte, last modified September 29, 2021, http://copyrightblog.kluweriplaw.com/2021/09/29/australian-court-says-that-ai-can-be-an-inventor-what-does-it-mean-for-authors/

regulations on the field. Unlike an empirical juridical approach where the emphasis is on human behavior, the normative judicial approach focuses more on secondary data obtainable from the internet or library by way of Literature Study *(Studi Kepustakaan)*[35].

The Descriptive-Qualitative Analytical Method is used to interpret the truth of the research on the problem by conveying the quality of the results of the research data collected through the literature study method. The purpose of using a descriptive-qualitative approach is to evaluate the data accurately and coherently[36]. As such, this 36 Article will use such an approach to evaluate the data gathered and accumulated. Having briefly explained the Research Method used, subsequently the Discussion and Analysis will be presented to answer the Research Question posed previously

B. Discussion

B. 1. What is the extent to which an AI regarded as Inventors of its Inventions under the Umbrella of Intellectual Property Rights Law

B. 1. 1. Legal Basis of Ais and Intellectual Property Rights

Preliminarily, it is best to look into the issue of AI from a legal standpoint first, that is to say with the non-existent Law on AIs, how does any reasonable person treat them under the umbrella of

[35] Bambang Sunggono, *Metodologi Penelitian Hukum* (Jakarta: PT Raja Grafindo Perkasa, 2003)
[36] Ibid.

Indonesian Intellectual Property Rights? As far as the Legal System is concerned, contemporarily, the only Law that is the closest in governing AIs can be found in Law No. 19 of 2016 regarding Electronic Information and Transaction[37]. For the realization of AI usefully and practically in Indonesia, the Agency for the Assessment and Application of Technology (BPPT) has published the National Strategy for Indonesian Artificial Intelligence 2020-2045 (hereinafter referred to as NSAI).[38]

However, the arrangement is still at the policy direction in general terms and does not regulate in detail. According to NSAI, Indonesia's Artificial Intelligence is a statement to implement the initiative programs set out in the national strategy roadmap for artificial intelligence in achieving Indonesia's 2045 vision. Indonesia, through NSAI, has offered a Mission Statement to actualize AIs in Indonesia in line with Indonesia's 2045 vision. The Mission Statements provided in NSAI are as follows: 1) Realizing the Ethical Artificial Intelligence in accordance with the values of Pancasila, 2) Preparing Artificial Intelligence Talents that are competitive and of good character, and 3) Realizing a data ecosystem and infrastructure that supports AI's contribution to state interest. In pursuance of the Mission Statements provided, Indonesia plans on financing BPPT on its research on AIs and its role in the upcoming future for our Nation's Well-Being.[39]

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[37] Law No. 19 of 2016 concerning Electronic Information and Transaction

[38] "BPPT Siap Gelar Artificial Intelligence Summit 2020," Badan Pengkajian dan Penerapan Teknologi, accessed December 17, 2021, https://www.bppt.go.id/berita-bppt/bppt-siap-gelar-artificial-intelligence-summit-2020

[39] "Strategi Nasional untuk Kecerdasan Artifisial (STRANAS KA) Indonesia Tahun 2020-2045," Badan Pengkajian dan Penerapan Teknologi, accessed December 17, 2021, https://ai-innovation.id/server/static/ebook/stranas-ka.pdf

By reading Article 1 (8) of Law No. 11 of 2008 which says *"Electronic Agent is an automated electronic means that is used to initiate an action to certain Electronic Information, which is operated by Persons."* [40] Apparently, the definition provided therein can be commensurate with the definition of AIs as AIs is an automated machine used to collect electronic information and disseminate it to anyone.[41] The Clause "automated" was constructed as a bridge to categorize AIs as an Electronic Agent. Since no Express Provision about AIs is stipulated by our Law, it is in our argument to assume that Electronic Agent refers to AIs. Following such reasoning, now we have established that AIs is an Electronic Agent, such reasoning was also echoed by Pratidina (2017) on her Thesis[42] and also Hukum Online Article 42 titled "*Pengaturan Hukum Artificial Intelligence Indonesia Saat Ini*".[43] Turning now to Article 21 (2) of Law No. 11 of 2008 which stipulates:

"(2) Parties responsible for any legal effect in the conduct of Electronic Transactions as intended by paragraph (1) shall be regulated as follows:

a. if conducted in person, any legal effect in the conduct of Electronic Transactions shall become the responsibility of parties to a transaction;

[40] Article 1 (8) of Law No. 11 of 2008 regarding Electronic Information and Transaction
[41] Ibid.
[42] Ilhami Ginang Pratidina, "Keabsahan Perjanjian Melalui Agen Elektronik Dalam Sistem Hukum Kontrak Indonesia" (PhD diss., Universitas Airlangga, 2017)
[43] "Pengaturan Hukum Artifical Intelligence Indonesia Saat Ini," Zahrasafa P. Mahardika, and Angga Priancha, accessed December 17, 2021, https://www.hukumonline.com/berita/a/pengaturan-hukum-artifical-intelligence-indonesia-saat-ini-lt608b740fb22b7

b. if conducted by proxy, any legal effect in the conduct of Electronic Transactions shall become the responsibility of the grantors of the proxy; or

***c. if conducted by Electronic Agents, any legal effect in the conduct of Electronic Transactions shall become the responsibility of Electronic Agent providers**."*[44]

Highlighting Verse C of the aforementioned Article, any legal effect in the conduct of Electronic Transaction shall hold the providers of Electronic Agents liable. This verse is really fascinating to look into as this would mean an element of attribution is present as regards to AIs' conduct, meaning, the acts discharged by AIs shall hold the provider liable or in other words the Owners of the AIs will be liable for such conduct. By that provision, AIs' conducts can be attributable to the Owners of the AIs regardless of the conducts being lawful or unlawful and the legal consequences arising out of the conducts will be attributable to the Owner. Having explained the Provisions of AIs in Indonesia as inferred from Article 1 (8) of Law No. 11 of 2008,[45] the subsequent issue to be addressed is Patent Rights in Indonesia. Indonesia, upon ratifying Law No. 7 of 1994 regarding the Ratification of the Agreement Establishing the World Trade Organization (WTO)[46] in which there are attachments, one of which is the TRIPs Agreement, Indonesia as a matter of course is bound to the provisions of the TRIPs Agreement. The TRIPs Agreement is a complete agreement and with a higher standard

[44] Article 21 (2) of Law No. 11 of 2008 regarding Electronic Information and Transaction
[45] Article 1 (8) of Law No. 11 of 2008 concerning Electronic Information and Transaction
[46] Law No. 7 of 1994 concerning the Ratification of the Agreement Establishing the WTO

compared to the previous International Intellectual Property Rights Treaties. The Completeness can be seen in Part II of TRIPs, important regulatory standards are regulated in the areas of Copyright and Related Rights (also known as Neighboring Rights), Trademarks, Industrial Designs, Patents, Layout-Designs (Topographies) of Integrated Circuits, and Protection of Undisclosed Information (also known as Trade Secrets or Trade Secrets). The chapter even regulates the supervision of anti-monopoly practices in the license agreement. The Realization of the Provisions of Patent as provided by TRIPs can be found in Law No. 13 of 2016 regarding Patent amending Law No. 14 of 2001. Pursuant to Article 1(1) thereof, Patent is "an exclusive right granted by the state to an inventor for his invention in the field of technology for a certain period of time to carry out the invention himself or to give approval to another party to implement it."[47] The key factors that the Article will emphasize on are the subjects or ratione personae of Patent. Upon reading the stipulation of that Article, there are three subjects being mentioned: 1) State, 2) Inventor, and Another party. Further, Article 1 (2) of Law No. 13 of 2016 stipulates Inventor as "*One or several **people** who jointly implement the ideas that are poured into the activities that produce the Invention*."[48] As the definition of Inventor in this Article has stipulated that Inventor must be "**people**", any reasonable person would find that the AIs cannot be an inventor and only humans can be deemed as an Inventor.

As such, the Provision is clear and express in the Patent Law that Inventor must be human. However, that is not to say it is

[47] Article 1 (1) of Law No. 13 of 2016 regarding Patent amending Law No. 14 of 2001
[48] Article 1 (2) of Law No. 13 of 2016 regarding Patent

impossible for AIs to be an Inventor of a Patent granted over its inventions as we will explore into the Provisions that may be interpreted in favor of the AIs on the Grant of Patent in the later paragraph. Turning now to the definition of Invention, pursuant to Article 1 (5) of Law No. 13 of 2016, Invention is defined as "*an inventor's idea that is poured into a specific problem-solving activity in the field of technology in the form of a product or process, or the improvement and development of a product or process*."[49]

Thus, by definition, Invention must be derived from an Inventors' idea, any invention that arises out of people other than the inventors cannot be regarded as Inventions. Before going further into can AIs be granted Ownerships question, one must understand the principle of Novelty for an Invention to be given a Patent. First and foremost, it is important to define what Novelty is. According to the Oxford Dictionary, Novelty is defined as the quality of being new, different and interesting. As for the rationae materiae or subject matter of patent, Article 3 (1) of Law No. 13 of 2016[50] vis a vis Article 27 of TRIPs[51] provides that Patent shall be accorded to any inventions that are new, involve an inventive step, and are capable of industrial application. Moreover, the TRIPs further explain that inventive steps capable of industrial application are respectively deemed as "non-obvious" and "useful".[52]

Following that, "new" as mentioned previously refers to the criterion of Novelty. In both Common law and Civil law countries, the Novel test has prevailed when it comes to granting Patent to

[49] Article 1 (5) of Law No. 13 of 2016 regarding Patent
[50] Article 3 (1) of Law No. 13 of 2016 regarding Patent
[51] Article 27 of TRIPS
[52] Article 27 (1) of TRIPS

inventions as its *rationae materiae*.[53] Further, the principle of "non-obvious" and "useful" must be met as well as inventive steps as defined in Article 3 (1) of Law No. 13 of 2016 also refers to those two mentioned principles. Now in regards to the Novelty test, our nation has not yet determined what does the novelty test entail, however, pursuant to Article 107 of Omnibus Law on Job Creation, **noting that Patent can be divided into patent and simple patent** (is any new invention, development of an existing product or process, and can be applied in industry) the provision in the Omnibus Law adds another Clause in Article 3 (3) of Law No. 3 of 2016 which says the development of an existing product or process includes simple process, product, and method. That being said, 56 irrespective of it, the Novelty test did not receive any modification from the Omnibus Law. Instead, both types of Patent still require the Novelty test. With that in mind, patents can be granted only to inventions that are **new, non-obvious, and useful.** [54] These three requirements are cumulative as echoed by Article 27 of TRIPs.

As such, deviation from or the unfulfillment of one criterion would result in the non-applicability or non-conference of Patent to the Inventions. Conclusively, the novelty test or criterion in our Indonesian Law, namely, Law No. 13 of 2016 as revised in Article 107 of Omnibus Law on Job Creation[55] echoes the novelty test.

[53] Suzanne Scotchmer and Jerry Green, "Novelty and disclosure in patent law," *The RAND Journal of Economics* no. 1 (1990): 131-146
[54] Fernando Fernández, "The Non-Obviousness Requirement in the Chilean Patent Law: A Critical Assessment," *Revista Chilena de Derecho* 38, no. 3 (2011)
[55] Article 107 of Law No. 11 of 2020 on Job Creation

B. 2. Procedural Requirement for Application of Patent

Moving now to the Procedural Requirements for Patent to be granted, Article 24 (1) of Law No. 13 of 2016 governs that *"Patents are granted upon application."* Following that, Article 24 (2) of Law No. 13 of 2016 provides *"The application as referred to in paragraph (1) submitted by* ***the Applicant*** *or* ***His Mandatee (Kuasanya)*** *to the Minister in writing in Indonesian by paying a fee."* Interestingly, by reading these two Provisions, we are introduced 62 to two subjects, namely, Applicant and Mandatee. Fortunately, the Law is not silent on the definition of those two subjects as the Applicant, pursuant to Article 1(5) of Law No. 13 of 2016 is defined as *"****the party*** *applying for the Patent."* While Mandatee pursuant to Article 1792 of 63 Indonesian Civil Code (ICC) is defined as *"A mandate is an agreement, by which an individual assigns authority to* ***another person, who accepts it, to perform an act on behalf of such mandator****."* Taking the two definitions into account, very clearly the Mandatee as provided by Article 24 (2) of Law No. 13 of 2016 cannot be deemed as an AI since Mandatee is defined as a Legal Person according to the ICC. Nonetheless, as for the definition of Applicant, interestingly, the Law does not mention that the party applying for a Patent must be a Person or Legal Entity. Based on the wording of the Provision, any reasonable person, in view thereof, will find that the Provision does not limit the subject of Applicant to a Legal Person, but it includes anyone that submits an Application for a Patent to the Ministry in Indonesia.

Suffice to say that the Provision of Article 1(5) of Law No. 13 of 2016 does not entail exhaustive interpretation of the subject. Following this line of reasoning, a question will arise out of such wording in relation to AIs, that is whether AIs can be an Applicant

for the purpose of Article 24 (1) of Law No. 13 of 2016? Noting the fact that Indonesia had ratified Law No. 7 of 1994 regarding the Ratification of the Agreement Establishing the WTO[56], requiring Indonesia to abide by the Provisions set out in TRIPs. By looking into Article 29 (1) of TRIPs which says "*Members shall require that* ***an applicant*** *for a patent shall disclose the invention in a manner sufficiently clear and complete for the invention to be carried out by a person skilled in the art and may require* ***the applicant*** *to indicate the best mode for carrying out the invention known to* ***the inventor*** *at the filing date or, where priority is claimed, at the priority date of the application.*" Evidently, beginning from the phrase "*may require*", It can be interpreted that the second prong of this Provision provides that an Applicant and the Inventor may be two different persons. In other words, an Applicant need not to be an Inventor of the Invention to apply for a Patent over an Invention. Further, it is interesting to note that TRIPs do not provide any Provision requiring human Inventor, Applicant, and Owner of Patent. Additionally, Patent Corporation Treaty (PCT) as ratified by Presidential Decision No. 16 of 1997 does not expressly stipulate that Inventors or Applicants must be human.

B. 3. AI as an Applicant for Patent

Absent such Clauses requiring the Subjects of Patent to be human, nothing shall preclude any reasonable person from concluding that non-human can be deemed as Inventor, Applicant, and Owner of Patent unless the Domestic Law states otherwise (which Law No. 13 of 2016 does as regards to Inventor). On that note,

[56] Zulfikar Ali Butho, "Ratifikasi WTO dan Dampaknya pada Pembangunan dan Pembaharuan Hukum Ekonomi Indonesia (Suatu Tinjauan Ontologis)," *Keadilan Progresif* 2, no. 2 (2011)

as our Patent Law has provided exhaustive list of definitions for the subjects mentioned, except for Applicant, it is in our argument that AIs may be an Applicant for its Inventions, however, a question arises as to how an Applicant can file an Application for its Invention to the Ministry. If AIs are unable to file an Application on its own, it would be impossible for an AI to have its invention patented but if an AI is able to autonomously file an Application on its own, as our Law is silent on non-human Applicant, very clearly the AI filing the Application can be deemed as an Applicant. Contrary to Inventor wherein our Patent Law expressly requires human Inventors[57].

Nonetheless, as Article 1(1) of the Patent law mentions that Patent is "*an exclusive right* ***granted by the state to an inventor for his invention***". The only one capable of receiving Patent is the Inventor and not the Applicant. Therefore, an AI though by definition is able to file an Application, it would not still be recognized as the Inventor of its Invention, even if the AIs invented the Invention that fulfills the novelty, non-obvious, and useful requirements. Admittedly, the Respondent being the Commissioner of Patent rejecting the Application of Patent by the Applicant registering his AI as the Inventor in the Groundbreaking Case of Thaler v Commissioner of Patents [2021] even held that AIs may satisfy the requirements mentioned previously but Respondent argued that the Inventor must be human. In light of that, an AI may be an Applicant but still would not be acknowledged as the Inventor pursuant to Indonesian Patent Law as the Provision expressly requires Inventors to be human. Is this the extent to which AIs can

[57] Article 1(3) of Law No. 13 of 2016 regarding Patent

be granted Patent for its Inventions? Does the answer stop at the point in which AIs can only be deemed as an Applicant but cannot be acknowledged as an Inventor because the Patent Law requires humans to be the Inventors? Can AIs be deemed as Inventors although it is clear that the Patent Law disallows it? The Crux of the Discussion will begin from the elucidation on the Thaler case. Very briefly, the premise and the *rationae decidendi* of the case will be explained.

B. 4. World-First Decision: AI Recognized as a Patent Inventor under Australian Law

The Applicant, Dr. Stephen Thaler, had named DABUS (Device for the Autonomous Bootstrapping of Unified Sentience) as the Inventor on an international application filed under the Patent Cooperation Treaty, designating Australia. DABUS' different goods and methods aimed at an improved fractal container, which claims to be a better food container for foods. The application had been denied by the Deputy Commissioner of Patents (Commissioner) or Respondent because it did not specify a human inventor. The Commissioner believed that the conventional sense of "inventor" (which is not defined in the Patents Act) was "inherently human," and therefore designating AI as the inventor was incompatible with section 15 of the Patents Act, which states that a patent may only be given to a person who: a) is the inventor; or b) would, on the grant of a patent for the invention, be entitled to have the patent assigned to the person; c) or derives title to the invention from the inventor or a person mentioned in paragraph (b); or d) is the legal

representative of a deceased person mentioned in paragraph (a), (b) or (c)[58].

Judge Beach found that there was no express or specific provision in the Patent Act requiring the Inventors to be human and that basically refutes the proposition that an Inventor cannot be non-human, in other words AIs can be inventors[59]. Judge Beach referred to the dictionary meaning of the word "Inventor" as an Agent noun and likened that to the word of "Computer" as in his own words "*one that might originally have been used only to describe persons, when only humans could make inventions, but can now aptly be used to describe machines which can carry out the same function.*"[60] Similarly, Judge Beach held that Inventor can also be used for machines that invent instead of a person that invents. Due to the dynamic nature of Law and recognizing the evolving nature of patentable inventions and their creators, any Inventor be it human or non-human should be granted rights to be an Inventor for the Inventions it creates. In a rhetorical manner, Judge Beach opined *"We are both created. Why cannot our own creations also create?"*

As regards to Section 15 (b) and (c) mentioned above, Dr. Thaler could bring himself within the scope of section 15(1)(b), according to Justice Beach. He explained that this Provision deals with a future conditional and that it does not necessitate the presence of an Inventor - all that is required is that he is eligible to have the patent assigned to him if a grant is made[61]. Additionally, he indicated that based on first impressions, Dr. Thaler would fall

[58] Thaler v Commissioner of Patents [2021] FCA 879, ¶ 58
[59] Thaler v Commissioner of Patents [2021] FCA 879, ¶ 165
[60] Thaler v Commissioner of Patents [2021] FCA 879, ¶ 15
[61] Thaler v Commissioner of Patents [2021] FCA 879, ¶ 176

under section 15(1)(c), because he has derived rights to the invention from DABUS. Despite the fact that DABUS is not a legal person who can legally assign the invention title can be derived from DABUS due to his ownership of DABUS, his copyright in the source code of DABUS, and his ownership and possession of the computer on which it lives.[62] Based on those reasons, Judge Beach held that an AI system, namely, DABUS can be an Inventor.

It is not disputable that the evolving nature of Law should be taken into account, specifically as regards to Intellectual Property Rights. It would be unfair for an Invention to not get patented just because the Inventor of such socially valuable Inventions fulfilling the Novelty, Non-obvious, and Useful requirements is non-human. Further, as Ryan Abbott put in his scholarly journal *"Preventing patents on computational inventions by prohibiting computer inventors, or allowing such patents only by permitting humans who have discovered the work of creative machines to be inventors, is not an optimal system."*[63] Would it be fair for computers or AIs to not be deemed as Inventors even after autonomously invented the outputs but were discovered by Humans and as such the Patent was granted to him or her? This is a rhetorical question posed to any person that plans on inhibiting the sophistication of AIs.

B. 5. Objections by United Kingdom Court of Appeal to Non Human Inventor

In a global battle against Courts ruling that Inventors must be human, Lord Justice on the Court of Appeal in Stephen Thaler v. Comptroller General of Patent Trademarks and Designs in United

[62] Thaler v Commissioner of Patents [2021] FCA 879, ¶ 193
[63] Ryan Abbott, "I Think, Therefore I Invent: Creative Computers and the Future of Patent Law." *Boston College Law Review* 2, 57, no. 4 (2016)

Kingdom (UK) (hereinafter referred to as Thaler UK) held that *"Only a person can have rights. A machine cannot."*[64] On that basis, Lord Justice opined that Inventor and the Owner of the Patent should not be non-human otherwise it would be contrary to Section 13 of the UK Patent Act which expressly requires Inventor to be human[65]. In other words, ab initio, at the time of applying for Patent Right over any Invention the Inventor must be human. With that in mind, this will direct us to the legal means in which AIs in Indonesia can be recognized as an Inventor, assuming that the identity of AIs is not debatable and Electronic Agent as defined by Article 1 (8) of Law No. 19 of 2016 regarding Electronic Information and Transaction is legally sound.

B. 6. AIs being acknowledged as Inventors in Indonesia

Now turning to the Clause through which the Australian Court found AI can be an Inventor, specifically section 15 (b) and (c) of the Australian Patents Act, stipulating that a Patent may only be given to (b) a person who would, on the grant of a patent for the invention, be entitled to have the patent assigned to the person; and (c) or derives title to the invention from the Inventor or a Person mentioned in paragraph (b).[66] Now the Key Clause here is the word "Derivation" in Verse (c) and "Entitled" in Verse (b). Pursuant to Article 24 (2) of Law No.13 of 2016, though, Indonesian Patent Law does not expressly mention the word "Derive" (verb) or " Derivation" (noun), however, it has been acknowledged by the Australian Federal Court that the word "Derive" implies *"to receive*

[64] Thaler v Commissioner of Patents [2021] UK, ¶ 102
[65] Thaler v Commissioner of Patents [2021] UK, ¶ 146
[66] Australian Patents Act 1990

or obtain from a source or origin, to get, gain or obtain, and emanating or arising from."[67]

Indonesian Patent Law does not acknowledge the notion of Entitlement and Derivation of Patent Right through which a person who is not the Inventor can be entitled to have the Patent assigned to him or her by operation of Law. Nonetheless, the Law is not silent on the issue of Assignment or Entitlement. In fact, Article 21 (2) of Law No. 11 of 2008 regarding Electronic Information and Transaction provides (as already laid out above):

"(2) Parties responsible for any legal effect in the conduct of Electronic Transactions as intended by paragraph (1) shall be regulated as follow:

…… ……

c. if conducted by Electronic Agents, any legal effect in the conduct of Electronic Transactions shall become the responsibility of Electronic Agent providers*."*

Thus, all of the conducts of Electronic Agent or AIs shall be attributable to the Provider, meaning the Owner. In the event that an AI invented an Invention, though the Law does not acknowledge Inventor can be non-human, our Law, similar to section 15 (b) and (c) of the Australian Patents Act, also opens the possibility of Entitlement by way of Law. The biggest hurdle impeding Indonesia from acknowledging AI as the Inventor of Patent is the Provision of Inventor in and of itself that is stipulated very restrictively, requiring human. In response to that, I would reemphasize the legal opinion asserted by Kelsen, that is Law *"is a Science that deals not with*

[67] Thaler v Commissioner of Patents [2021] UK, ¶ 179

the actual events of the world (What is) but with norms (What ought to be)."[68]

For that purpose, one must not interpret or view law in light of current matters only but also with the view of the future occurrences, one of which is the Growth of AIs and the fact that Legislation on Machine Rights might come sooner than expected. Thus, turning now to the definition of Inventor provided by our Indonesian Patent Law which says " *One or several people who jointly implement the ideas that are poured into the activities that produce the Invention."*[69] Clearly now, if we look into the Etymology of the word "Inventor", any Language Expert upon analyzing it will find that TRIPs being the International Agreement that binds all of its Member States including Indonesia has echoed the word " Inventor" in Article 29 thereof, Applicant and Inventor are separate Individuals as it recognizes that the Patent can be granted to Applicant by way of entitlement though he or she is the Inventor. As the agreed use of the word "Inventor" is in English, any reasonable person must first contrast and compare the definition of Inventor provided by the English dictionary and Indonesian Dictionary.

The Respondent in the Thaler case argued that based on the Dictionary definitions provided by Oxford, Macquarie, and Fowler Dictionaries, Inventor is defined as "someone or a person who invents". Going with such a definition, Inventor is human according to Respondent.[70] However, Judge Beach, being the sole Judge

[68] Stanley Paulson, "The Neo-Kantian Dimension of Kelsen's Pure Theory of Law," *Oxford Journal of Legal Studies* 12 (1992): 311–32.
[69] Article 1(3) of Law No. 13 of 2016 regarding Patent
[70] Thaler v Commissioner of Patents [2021] UK, ¶ 97-100

adjudicating the case begged to differ by arguing that Dictionary definition is *"inclusive and exemplary"*[71] and opined that Dictionary by nature is developed from *"Historical Usage"*[72]. That is to say, there would be no definition for "something that invents" when the something has not existed yet. The Judge went further and compared the word "Inventor" with "Computer", saying that back then Computer was defined as a Person who makes computations or computes but now the word is used for a thing or something that computes when Computer as a machine came into existence.[73] Therefore, the word "Inventor" should not be limited to humans but also include non-human such as AIs as the Dictionary develops itself from "Historical Usage". Be that as it may, Definitions provided by the Dictionary cannot trump the Statutory Provisions and it has been acknowledged in Indonesia that Law overtrumps any definitions or provided outside of the Provision. For example, even a Provision in a Contract or Agreement that legally binds two parties can be dismissed if it is found contrary to the Civil Code. By that reasoning, we cannot substitute the definition of Invention with that from the Dictionary Definition.

Nevertheless, the Definition of Machine that invents is not yet provided by the Dictionary, instead to have AIs acknowledged as an Inventor, the Definition of Inventor as provided by our Patent Law as *"One or several **people**"*[74] should be amended accordingly to also 98 include Machine and AIs as it is undeniable that AIs will definitely be Inventors of its own Inventions, Further, the

[71] Thaler v Commissioner of Patents [2021] UK, ¶ 150
[72] Thaler v Commissioner of Patents [2021] UK, ¶ 152
[73] Thaler v Commissioner of Patents [2021] UK, ¶ 149
[74] Article 1(3) of Law No. 13 of 2016 concerning Patent

entitlement of Patent Rights to a person, on the grant of Patent, must also be regulated by our Law since it is possible for any person, not being the Inventor of the Invention, be entitled for the Patent if by Law he is entitled to it. If our Law does not construe the word "Inventor" restrictively and follows the definition provided PCT and TRIPs, very clearly, Machines and AIs can be acknowledged as Inventors in its own right and pursuant to Article 21 (2) of Law No. 11 of 2008 regarding Electronic Information and Transaction, the conducts of 100 an AI shall be borne by its Provider or Owner, as such, similar to the Rationae Decendi of Judge Beach in the groundbreaking AI Case, we submit that any person can derive a title to the Invention from an Inventor that is an AI by virtue of the AI being at their disposal.

Such Derivation should be distinguished from an Assignment as Derivation here refers to Possessory Title does not require Assignment[75]. Possession may arise from Ownership alone and does not expressly require the Assignment to be made first either by operation of law or Agreement[76]. By reading Article 21 (2) of Law No. 11 of 2008 regarding Electronic Information and Transaction, the fact that the conduct of Electronic Agent is attributable to the Provider is enough evidence that the Possession of Electronic Agent alone will attribute the Provider to all of its Agent or AI's legal consequences including Derivation of Title over the Invention may come by virtue of Ownership.

Similar to Australian Patent Law, as both Indonesia and Australia adopt provisions PCT and TRIPs, it is factual that our Law

[75] Thaler v Commissioner of Patents [2021] UK, ¶ 185
[76] Thaler v Commissioner of Patents [2021] UK, ¶ 189

allows the Patent right over the AI's Invention by virtue of Ownership be granted to the Provider or Owner of the AI. Such Entitlement or Automatic Derivation can also be found in the case of Employment Contract in which the fruits of the Employees will be taken by the Employer, including their Inventions.

Albeit absent such Clause in our Civil Code, however, generally most of the Employment Contracts in Indonesia contain the Specific Clause of Entitlement over the Employees' Inventions. In contrast to our Civil Code, Article 332 of the Swiss Federal Act on the Amendment of Civil Code provides "Inventions and designs produced by the employee alone or in collaboration with others in the course of his work for the employer and in performance of his contractual obligations belong to the employer, whether or not they may be protected." Through its similar disposition, without Assignment, the Employer or in this case the Owner of the Electronic Agent being an AI can derive the Patent Right over the Inventions produced by their Employee and Electronic Agent respectively.

Similarly, Article 12 (1) of Law No. 13 of 2016 regarding Patent Right provides that "The Patent Holder for the Invention produced by the Inventor in an employment relationship is the party providing the work, unless agreed otherwise." Therefore, our Law also governs the entitlement of Patent by way of possession and ownership. In short, the only hurdle being faced by AIs to be recognized as Inventors is the strict clause provided by Article 1 (3) of Indonesian Patent Law. Recognizing Lege Feranda as a principle in our Legal System, we truly implore the Government to expand the restrictive definition of Inventor provided in our Patent Law so as to include AIs as well.

C. Conclusion

Our legal system is dynamic by nature and always evolving according to the prevailing issues. Recently, the Omnibus Law was declared formally defective and has to be rectified by the DPR accordingly and this is a living proof that our Law will not cease to change[77]. The only constant in the world is a Change of Law, as such, no reasonable person should find that our Legal System will only treat Humans as the Inventors of their Inventions. The two Court's Decisions in South Africa and Australia ruling[78] that AIs can be inventors are strong and established evidences not merely established inferences that in the view of the world will be a starting point for AIs to be regarded as Inventors of its own Inventions. In short, AIs can be Inventors of its Inventions, however, by virtue of Article 21 (2) of Law No. 11 of 2008, in line with the notion of Derivation and Entitlement, the Patent Right over its Invention will be transferred to its Provider or Owners.

We are not entertaining the argument that AIs can be granted Patent Right, however, the only argument offered in this Article is the fact that AIs can be inventors and our Patent Law must acknowledge upon entering Society 5.0. If based on the Legal Reasoning above such Acknowledgement is possible then Changes to our Provisions in Patent Law should follow in response to the emergence of AIs within the world that is constantly developing.

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[77] Sania Mashabi, "Putusan MK: UU Cipta Kerja Harus Dinyatakan CACAT Formil," Kompas.com, November 25, 2021. https://www.bbc.com/news/technology-58668534

[78] BBC Technology News, "AI Cannot Be the Inventor of a Patent, Appeals Court Rules," BBC, September 23, 2021. https://www.bbc.com/news/technology-58668534

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