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Intellectual Property Challenges for AI-Driven Creativity: A Focus on Copyright and Patents in Emerging Economies

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Abstract

AI has the potential to enhance the level of creativity and productivity in the creative industry. The legal implications of this development must be carefully analyzed for the development of the creative industry, to establish a legal position on where AI stands in the increasingly competitive market, particularly within the realm of intellectual property law. This research examines the need for a legal framework for AI. It was conducted through the lens of intellectual property law, to determine its place within existing IPR regimes using the comparative legal method. Analysis of this study shows a variety of approaches taken by many countries, which shows a nuanced reality of how AI is viewed through the lens of intellectual property law. The results also justify the urgency to regulate AI and highlights the taxonomy dilemma of AI-generated

works within the creative industry, especially between copyrights and patent. The study ultimately suggests Indonesia to adopt a conditional approach in regulating AI, by avoiding radical legal interpretations to ensure a level of stability, as the global market for AI in the creative industry continues to be developed.

KEYWORDS: *Intellectual Property, Copyright, Patent, Creative Industry, Artificial Intelligence*

Introduction

Creativity is an integral part of development, as it has a significant impact on how the world is perceived.[1] It gives ways to perspectives that could help solve many problems through exchanging ideas and exploring novel possibilities.[2] One of the fruits of human creativity is art,[3] which has been thought of as the highest form of intelligence in the Renaissance era.[4] Today, the creative industry has become a way to support human creativity in the form of art, advertising, architecture, and software.[5] The industry reflects the capability of leveraging technological developments while facilitating many forms of human creativity to support economic growth. To safeguard the interests of the industry's stakeholders, intellectual property law steps in to provide legal protection and prevent other parties from copying the same elements.[6]

The creative industry's relevance varies by country, depending

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1 Nadia Intan Rahmahafida and Whitney Brigitta Sinaga, "Analisis Problematika Lukisan Ciptaan Artificial Intelligence Menurut Undang-Undang Hak Cipta," *Jurnal Pendidikan Dan Konseling (JPDK)* 4, no. 6 (2022): 9688–96, https://doi.org/10.31004/jpdk.v4i6.9911.

2 Lucy Lunevich, "Creativity in Teaching and Teaching for Creativity in Engineering and Science in Higher Education—Revisiting Vygotsky's Psychology of Art," *Creative Education* 12, no. 7 (2021): 1445–57, https://doi.org/10.4236/ce.2021.127110.

3 Diana Silfiani, "Indonesian Legal Protection for Song Commercialization and Music Copyrights in Digital Platforms," *PADJADJARAN Jurnal Ilmu Hukum (Journal of Law)* 9, no. 2 (2022): 152–69, https://doi.org/10.22304/pjih.v9n2.a1; Hari Sutra Disemadi, "Contextualization of Legal Protection of Intellectual Property in Micro Small and Medium Enterprises in Indonesia," *LAW REFORM* 18, no. 1 (2022): 89–110, https://doi.org/10.14710/lr.v18i1.42568.

4 David Hesmondhalgh, *The Cultural Industries*, 4th ed. (London: SAGE Publications Ltd, 2018).

5 Helena Majdúchová and Mária Kmety Barteková, "Innovations in the Creative Industry Entities," *SHS Web of Conferences* 74 (2020): 1–8, https://doi.org/10.1051/shsconf/20207402009.

6 Tyaswati W. L. Aniek, "Model of Legal Protection of Creative Economics in Obtaining Intellectual Property," in *Proceedings of the International Conference on Law, Economics and Health (ICLEH 2020)* (Paris, France: Atlantis Press, 2020), 618–25, https://doi.org/10.2991/aebmr.k.200513.118.

on how supporting factors can facilitate the commercialization of the products.[7] The development of science and technology in this case plays a role that is more relevant than ever.[8] Many technologies have become inseparable from the daily lives of the average person today while stimulating the speed of further technological development. Due to the rapid development of science and technology, devices have been created with reprogramming ability.[9] Artificial Intelligence (AI) is one of the cutting-edge form of this development, with its boundaries still being explored. Therefore, it is crucial to evaluate the potential risks early on to prevent the displacement of human creativity.[10] This urgency to regulate AI is amplified in Indonesia, where the creative industry significantly impacts social, cultural, and environmental aspects.[11] Like other technologies, AI has to be properly assessed through the lens of intellectual property law. This legal field can affect the future of AI, which can rival human creativity to some extents.

Numerous research have been conducted to analyze the potential of using AI in many sectors of life, including the management of Intellectual Property Right (IPR)[12] and the efforts to detect infringements.[13] The position of AI in the IPR legal framework has become a mainstream topic due to the impact of the COVID-19 pandemic on the rapid advancement of technologies and the

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[7] Anis Mashdurohatun et al., "The Effectiveness of Intellectual Property Rights Protection to Improve Creative Economy Realization in Semarang District," *Journal of Southwest Jiaotong University* 56, no. 2 (April 30, 2021): 385–93, https://doi.org/10.35741/issn.0258-2724.56.2.31.

[8] Yongkie Yongkie and Hari Sutra Disemadi, "Non-Fungible Tokens as Jurisdictionless Innovation: Legal Vacuum, Loopholes, Potentials and Solutions," *Widya Yuridika* 6, no. 1 (2023): 157–74, https://doi.org/10.31328/wy.v6i1.4035.

[9] Kadircan Keskinbora and Fatih Güven, "Artificial Intelligence and Ophthalmology," *Turkish Journal of Ophthalmology* 50, no. 1 (January 1, 2020): 37–43, https://doi.org/10.4274/tjo.galenos.2020.78989.

[10] Michael I. Jordan, "Artificial Intelligence—The Revolution Hasn't Happened Yet," *Harvard Data Science Review* 1, no. 1 (June 23, 2019): 1–9, https://doi.org/10.1162/99608f92.f06c6e61.

[11] Yanti Mayasari and Teddy Chandra, "Social Capital for Knowledge Management System of the Creative Industry," *Journal of Enterprising Communities: People and Places in the Global Economy* 14, no. 4 (July 9, 2020): 481–94, https://doi.org/10.1108/JEC-01-2020-0008.

[12] Amy J.C. Trappey, Mihai Lupu, and Josip Stjepandic, "Embrace Artificial Intelligence Technologies for Advanced Analytics and Management of Intellectual Properties," *World Patent Information* 61 (June 2020): 101970, https://doi.org/10.1016/j.wpi.2020.101970.

[13] Daniel Seng, "Detecting and Prosecuting IP Infringement with AICan the AI Genie Repulse the Forty Counterfeit Thieves of Alibaba?," in *Artificial Intelligence and Intellectual Property* (Oxford University Press, 2021), 292–320, https://doi.org/10.1093/oso/9780198870944.003.0014.

necessity for regulation in the shift to a digital economy.[14] Ultimately, research on AI and IPR revolve around the assessment of the risk and potential of AI. From a technical standpoint, AI poses serious risks of IPR infringement, as it is typically trained using massive volumes of data.[15] This research examines the potential for AI to coexist with IPR regimes without negatively affecting the creative industry. It analyzes normative considerations to regulate AI under IPR law and compares legal norms from other countries to Indonesia's existing laws related to AI, which can offer insights for future legislation.

This research is written to analyze the future of AI and how it affects society, through the lens of IPR. To understand the legal implications of this issue, the comparative legal research method is used to analyze the many frameworks of some developed countries dealing with AI-IPR issues and the rising urgency of the public. Despite being a developing country with many possible big economic achievements in its future, Indonesia's potential in developing AI and facilitating its growth to improve humanity is still relatively unknown. Therefore, this research mainly uses secondary data[16] such as case laws and the developments of regulations on AI from the countries used in the comparison and projects it into the available spaces in the Indonesian legal framework to be legally constructed. The approach utilized by this study is the doctrinal approach, to analyze the legal norms that exist within the relevant legal sources. Other secondary data used are the existing laws in the Indonesian legal system, namely Law No. 28 of 2014 on Copyrights and Law No. 13 of 2016 on Patents.

The countries analyzed in this study were selected because they have made significant, landmark legal developments in AI and intellectual property law, showcasing diverse approaches to AI-generated works. These examples provide valuable insights for shaping Indonesia's emerging legal framework, as this is the main objective of the study. Insights from the selected countries are essential because of their influential cases and regulations that address the challenges of AI creativity in the IPR lens. Key limitation

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[14] Chhavi Sharma and Reeta Sony, "AI-Generated Inventions and IPR Policy During the COVID-19 Pandemic," *Legal Issues in the Digital Age* 2, no. 2 (November 2020): 63–91, https://doi.org/10.17323/2713-2749.2020.2.63.91.

[15] Juha Vesala and Rosa Maria Ballardini, "AI and IPR Infringement: A Case Study on Training and Using Neural Networks," *Regulating Industrial Internet through IPR, Data Protection and Competition Law*, 2019, 99–114.

[16] Hari Sutra Disemadi, "Lenses of Legal Research: A Descriptive Essay on Legal Research Methodologies," *Journal of Judicial Review* 24, no. 2 (November 30, 2022): 289–304, https://doi.org/10.37253/jjr.v24i2.7280.

of this study stems mainly from the lack of empirical evidence regarding the impacts of AI on IPR-related cases, which can be accommodated by future research to explain the ongoing trend and/or the effectiveness of key legal frameworks in many jurisdictions across the world, or in Indonesia if such cases emerge.

The Seemingly Limitless Potential of Artificial Intelligence (AI) in The Creative Industry

In the heavily commercialized world, creativity has turned into one of the most important resources for development. The rise of the digital era has played a significant role in this as it allows creativity to shape new forms of output, such as web designs, architectural design in digital format, advertisement, or classic photography edited using computational tools, have been dominating the creative industry in the digital age. The creative industry has both contributed and benefited from the rise of digital literacy in the general public.[17] From a broad standpoint, AI has a straightforward definition, which is an intelligence created through many computational processes. The difference between AI and human intelligence is that AI is focused on mimicking human behavior for autonomy, while human intelligence tries to integrate different cognitive processes to adapt to new environments.[18] However, the developments of AI has led to its new capability of producing art such as images and videos, outputs that are generally creative in nature. Despite this, it is nevertheless imperative to note that AI does not make the decision to be creative but acts under human direction to try to mimic human creativity.

The creative industry is heavily dependent on creativity as a vital attribute of individuals. AI, in particular, has the potential to maximize outputs of the digital industry by generating output from numerous ideas at a faster pace than human intelligence, and even executing them to create a form of art. By delegating some development processes, creative industry players to focus on other aspects that cannot be replaced. This can enhance the efficiency of

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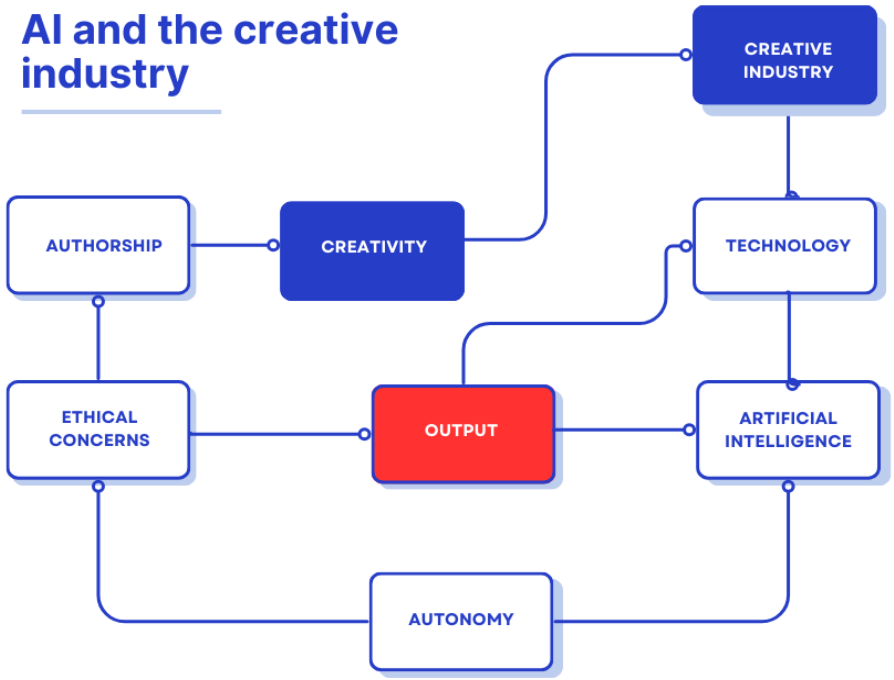
[17] Olena Pakhnenko et al., "Digitalization of Financial Services in European Countries: Evaluation and Comparative Analysis," *Journal of International Studies* 14, no. 2 (June 2021): 267–82, https://doi.org/10.14254/2071-8330.2021/14-2/17.

[18] Unlike artificial intelligence, human intelligence requires autonomy and capable of doing so in all of its processes, which is one of the many reasons why AI will continue to, at least throughout the foreseeable future, rely on human autonomy to fill the gaps in its very limited mental capacities. See, J E Korteling et al., "Human- versus Artificial Intelligence," *Frontiers in Artificial Intelligence* 4 (March 25, 2021): 622364, https://doi.org/10.3389/frai.2021.622364.

workflows essential for the sustained success of the creative industry. However, the lines that need to be drawn in these creative processes often remain blurred, making the it fundamentally challenging to define what creativity is in the case of AI-generated or AI-assisted artworks.

FIGURE 1: Mind map of AI utilization and its implications in the creative industry



Source: Author's analysis

From an economic perspective, the presence of AI means that creative industry players can allocate more resources to produce more outputs in a shorter timeframe. In the more traditional sectors of the creative industry,[19] AI is also capable of making its image by using keywords typed by the user, indicating communication between AI and human intelligence.[20] In the foreseeable future of AI, the utilization of AI in the creative industry can also inevitably cause

[19] Refers to creative industry in the forms of other products that are not entirely digital but still consist of elements of computational tools in the creative process, such as photography, architecture, advertisement, music, and other different or same forms of creative outputs with cultural elements.

[20] Yanru Lyu et al., "Communication in Human–AI Co-Creation: Perceptual Analysis of Paintings Generated by Text-to-Image System," *Applied Sciences* 12, no. 22 (November 8, 2022): 11312, https://doi.org/10.3390/app122211312.

many legal implications, as explained in the mind map above, which can all affect the dynamics of AI utilization in the realm of intellectual property law. This stems from the fact that AI challenges the fundamental nature of authorship and autonomy behind every single creative process that is generated artificially by the algorithm of an AI.

Comparison of Cases and Regulations on Artificial Intelligence (AI) through The Lens of Intellectual Property

Black's Law Dictionary provided a timeless and intriguing definition of taxonomy, which is the "scientific classification of subjects into groups distinct from each other". This definition opens many pathways for the formalist view to develop a framework of doctrines on the classification of legal sources, particularly the ones referring to cartography as the base argument of "stability in the geographical features to be mapped through legal taxonomy."[21] In a civil law system such as the one governing the rule of law in Indonesia, this cartography is visible, specifically after the rise of tech startups, to bring digitalization into the lives of many Indonesians in the archipelagic territory.

Indonesia does not have any law that regulates AI specifically. Instead, it relies on the closest meaning to AI that exists in Law No. 11 of 2008 on Electronic Information and Transactions (EIT Law), under the term "electronic agent". Meanwhile, EIT Law defines an electronic agent as "a device of an Electronic System made to act on a certain information automatically conducted by a Person."[22] This definition opens the normative pathways to regulate AI as it provides the base definition using the "agent theory", which dates back to the early days of machine learning, where Wooldridge and Jennings outlined the important attributes of an agency such as mobility, veracity, benevolence, and rationality.[23] The legal framework can be developed with more specific purposes, depending on the related legal fields through this starting point.

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[21] Nicole Reiz, Shannon O'Lear, and Dory Tuininga, "Exploring a Critical Legal Cartography: Law, Practice, and Complexities," *Geography Compass* 12, no. 5 (May 2018): 12368, https://doi.org/10.1111/gec3.12368.

[22] Article 1 Number 8 Law No. 11 of 2008 on Indonesian Electronic Information and Transactions *(Undang-Undang No. 11 Tahun 2008 tentang Informasi dan Transaksi Elektronik)*

[23] Michael Wooldridge and Nicholas R. Jennings, "Intelligent Agents: Theory and Practice," *The Knowledge Engineering Review* 10, no. 2 (June 7, 1995): 115–52, https://doi.org/10.1017/S0269888900008122.

Therefore, it is crucial to examine the relevant legal developments, such as case law and legislation, in other nations where the environment is more favorable.[24] The listed legal developments could indicate implications with common IPR regimes that are used in the creative industry.

TABLE 1. Comparison of Cases and Regulations on AI through The Lens of Intellectual Property

Country	Type of Legal Development	Legal Development	Content	IPR Implications
Australia	Case law	Thaler V Commissioner of Patents [2021] FCA 879	The Federal Court found in Thaler v Commissioner of Patents [2021] FCA 879 that, for the Patents Act 1990, an AI system could be named as an inventor on a patent application.	Direct link to the Patent regime, where instead of only humans, AI can be considered an inventor of a patent.
China	Case law	Beijing Intellectual Property Court (2017) Jing 73 Min Zhong No. 797 Civil Judgment. April 2, 2020	Videos of the earth's surface taken by a sports camera. The Court determined that although the camera was not under control during the automatic overhead recording process, human intervention was still there and reflected in the preselection of a video recording mode, display format, sensitivity, and other parameters of the camera.	Indicates that any unauthorized use of the footage constitutes a copyright infringement, even though it was taken by an automated process.
		Beijing Feilin Law Firm v Baidu Corporation, No 239 [2019], Civil	The Beijing Internet Court denies copyright to works created solely by AI.	Originality was assessed from an objective perspective, and texts created by AI were found to

[24] Conducive environment here refers to critical factors in the success of AI development, such as size, digital initiatives, and access, two of which Indonesia lacks and countries like India sufficiently has. See Umar Bashir Mir et al., "Critical Success Factors for Integrating Artificial Intelligence and Robotics," *Digital Policy, Regulation and Governance* 22, no. 4 (August 12, 2020): 307–31, https://doi.org/10.1108/DPRG-03-2020-0032.

		First Instance, Beijing Internet Court, 25 April 2019		display originality to some extent. 25 Furthermore, the court added that human involvement in the creation is an additional requirement for copyright protection, instead of declaring that all non-human created works had no originality.
		Shenzhen Tencent Computer System Co., Ltd. v. Shanghai Yingxun Technology Co., Ltd. ((2019) Yue 0305 Min Chu 14010)	In the judgment, the court ruled that the news written by an AI made to assist the Plaintiff, was under the protection of copyright law. Defendant infringed upon the copyright of Plaintiff by copying the news.	This decision looked at the entire comprehensive process of creation and determined that human beings with their capacity were still involved, and should be credited.
	Technical examination guidelines for IPR application	Revision of Patent Examination Guidelines 2020	The Guidelines include special provisions on the examination rules for patent applications for inventions related to AI and other fields as well as the scope of protection.	Provides that the application of a patent related to AI cannot be separated from all elements of AI such as algorithms and databases, therefore, should be viewed as one system.
Germany	Case law	Decisions relating to patent applications 10 2019 129 136.4 and 10 2019 129 136.4	The German Patent and Trademark Office (DPMA) rejected two patent applications named the AI machine called DABUS as the inventor.	The decision quotes that according to Sections 6, 37, and 63 of the German Patent Act, and Section 7 of the German Patent Ordinance, the inventor can only be a natural person.
South Korea	Legislative measure	AI Copyright Guidebook (forthcoming)	The South Korean government does not allow copyright registration of AI generated content that are without human creative intervention.	The South Korean government emphasizes the importance of human creative intervention, with basic norms going back to the Copyrights Act Article 2 detailing examples of work.

[25] Ming Chen, "Beijing Internet Court Denies Copyright to Works Created Solely by Artificial Intelligence," *Journal of Intellectual Property Law & Practice* 14, no. 8 (2019), https://doi.org/10.1093/jiplp/jpz085.

		Patent Law	The South Korean government does not recognize patents made by AI. No further contextualization and exception such as the one for the Copyrights regime has been made.	Referring to Article 33(1) of Patents Act, 'person' only refers to legal person, which AI isn't.
United Kingdom	Legislative measure	Copyright, Designs, and Patents Act 1988	On the authorship of work, specifically Articles 9(3) and 12(7) refer to computer-generated works. Similar provisions apply to UK's unregistered design rights under Section 214(2) of the Copyright, Designs, and Patents Act 1988.	Both of these regulations recognize the possibility of creation based on computational methods, thereby giving authorship to the person involved in making the arrangements necessary for the creation.
		Registered Designs Act 1949	Section 2(4) of the Registered Designs Act 1949 sets out that: "In the case of a design generated by computer in such that there is no human author, the person by whom the arrangements necessary for the creation of the design is made shall be taken to be the author."	
United States	Case law	United States Patent and Trademark Office Decision of April 27, 2020, on Application No. 16/524,350	The United States Patent and Trademark Office (USPTO) ruled that the AI system cannot be listed or credited as inventors on a US patent.	The decision stated that an "inventor" of a patent under the current patent law can only be a "natural person."
		United States Court of Appeals for the Federal Circuit [2022]: Thaler v Vidal, 43 F.4th 1207	US District Court affirmed USPTO's denial of the AI system as the inventor.	

Sources: Author's analysis

The table above shows a variety of perspectives on how the law should view AI through the lens of intellectual property law. Most of the IPR regimes that made the list in implication columns are patent and copyright, except the United Kingdom's Registered Designs Act for protecting industrial designs in the table. Problems with the industrial design regime often come from many interpretations of what constitutes similarity, specifically when the notion of equality is in question.[26] The variation in IPR awareness across different professions may be a contributing factor. A study noted that compared to industrial designers, graphic designers in China exhibit lower concern for IPR issues.[27] This can be attributed to the unique legal landscapes that those creatives are operating in. For instance, China protects designs through design patents and provides an effective level of protection in many aspects of its economic development.[28]

Given the taxonomic issues surrounding industrial design, this research focuses on exploring the potential of protecting AI-generated creations through copyrights and patents. The limitations posed by the legal world on the potential of AI stem from the challenge of the definition, which in the case of AI, is highly technical and rapidly evolving, thus making it a highly complex discourse.[29] However, this is a misguided outlook on the context of AI. Wang succinctly summarizes the problem by stating that a definition can refer to the usage of a word or the content of an idea conveyed, but discussions about AI typically concentrate on the content rather than usage, despite recognizing the significance."[30] In the context of technology, laws aim to ensure that technology is leveraged for the greater good, without violating the rights of people. Therefore, the crucial aspect is utilization, not necessarily the abstract concept of AI, although understanding the abstract can provide a general

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[26] Muchtar Anshary Hamid Labetubun, "Public Domain in Dispute Settlement of Cancellation of Industrial Design Rights," *International Journal of Innovation, Creativity and Change* 10, no. 5 (January 5, 2020): 30–42, https://doi.org/10.53333/IJICC2013/10503.

[27] Xu Sun et al., "Understanding Attitudes towards Intellectual Property from the Perspective of Design Professionals," *Electronic Commerce Research* 21, no. 2 (June 20, 2021): 521–43, https://doi.org/10.1007/s10660-019-09378-z.

[28] Zhiyuan Chen and Jie Zhang, "Types of Patents and Driving Forces behind the Patent Growth in China," *Economic Modelling* 80 (August 2019): 294–302, https://doi.org/10.1016/j.econmod.2018.11.015.

[29] Andreas Kaplan and Michael Haenlein, "Rulers of the World, Unite! The Challenges and Opportunities of Artificial Intelligence," *Business Horizons* 63, no. 1 (January 2020): 37–50, https://doi.org/10.1016/j.bushor.2019.09.003.

[30] Pei Wang, "On Defining Artificial Intelligence," *Journal of Artificial General Intelligence* 10, no. 2 (January 2019): 1–37, https://doi.org/10.2478/jagi-2019-0002.

understanding of its risks and benefits.

A. Germany and The United States

Germany and the US have imposed restrictions on the patent ownership framework, however, the cases in the table did not show a conservative approach. The two legal systems only restricted patent applications, where AI was listed as the author. Meanwhile, limiting authorship to natural persons is not progressive either. The two cases do not address the future role of AI in the patent creation process, leaving room for further litigation and legislative measures. The case involving DABUS, a patent-like invention, also encountered obstacles in other countries when Thaler, the creator of the AI, attempted to apply for a patent. It has been proposed that the IP created should belong to the owner of the machine, who is a natural person.[31] However, acknowledging this practice would mean ignoring the role of intellectual contribution in authorship, one of the most fundamental aspect of IPR laws.

B. China

The suggestion made for the DABUS cases is similar to the decisions of the Chinese courts which explicitly mentioned human involvement as an additional requirement for IP protection. Furthermore, it is founded on the same idea of human intervention in the creative process using AI, even though it was not what the plaintiff expected. Straus obtained no real technical details from the claims made by people who stated that AI can be the sole author, or in Thaler's words, the legal person behind a patentable invention.[32]

Furthermore, China gave a way for AI to be involved in a creative process but ultimately denied it from becoming the sole author of copyright. The competent courts first analyzed the aspect of originality, which was sufficiently proven. However, it also pointed out that originality was not a sufficient condition for copyright protection. One of the courts, The Beijing Internet Court, has a slightly different take. The Beijing Internet Court argued that Human creation should be a conditio sine qua non.[33] This is significant because the two decisions are quite similar but the one from the Beijing Internet Court normatively disallowed AI authorship and

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[31] Joseph Straus, "Will Artificial Intelligence Change Some Patent Law Paradigms?," *Zbornik Znanstvenih Razprav*, December 2021, 11–61, https://doi.org/10.51940/2021.1.11-61.

[32] Straus.

[33] Kaur and Kaur, "Role of Technology for Equality, Diversity and Inclusivity."

copyright protection for a creation based on data and algorithm. The Beijing Internet Court argued that the texts generated by the related computer software were readable in terms of expressions and were produced without human intervention. Therefore, it was unreasonable to broaden the scope of civil subjects to recognize related software with its database as a writer and a copyright holder.[34] By limiting civil subjects as copyright proprietors to "natural persons", the Beijing Internet Court substantially echoed the approach taken by others assigned to the DABUS case.

C. Australia

Australia gave a progressive approach by allowing AI to be named as the author of a patent. It is the first ruling to define AI technology comprehensively and hold that the development is capable of the autonomous invention and patent protection for AI-generated inventions.[35] The primary argument for the creative process is that DABUS is fully capable of autonomous invention through the artificial neural network and the optimistic outlook on the influence of innovative AI technologies.[36] The most important difference in this decision is how the court's expansive interpretation of the word "inventor". This expansive interpretation, according to Matulionyte, is problematic because it causes a two-fold problem. First, it results in the Patents Act treating 'human inventors' and 'AI inventors' differently.[37] Concerning the observation, there are no technical specifics that may explain how AI would exercise its rights as an inventor, while normal beings are capable of exercising the rights listed in Australia's Patents Act. Nevertheless, the approach taken by Australia can be considered a landmark approach that can later shape the future litigations regarding AI and its creations. For the foreseeable future, it is interesting to see how future cases will address this precedent, particularly regarding how AI would exercise the rights that it possess within the authorship, which can backfire on this landmark decision.

D. United Kingdom

The United Kingdom's legislation on copyrights, patents, and registered designs addresses the prospect of robots replacing people in the creative process while being passed at a time when AI

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[34] Kaur and Kaur.

[35] Rita Matulionyte, "AI as an Inventor: Has the Australian Federal Court Erred in DABUS?," *SSRN Electronic Journal*, 2021, 1–24, https://doi.org/10.2139/ssrn.4007789.

[36] Matulionyte.

[37] Matulionyte.

was not prevalent. According to the Copyright, Designs, and Patents Act 1988, in the case of a computer-generated design with no human author, the person who makes the essential arrangements is considered the author. This outlook is substantially similar to that of Chinese courts where the decisions are based on the argument that a machine invention or an AI production is eligible for copyright protection. This is because when examining the whole and comprehensive creative process, a human being is involved.

E. South Korea

South Korea as one of the leading contries when it comes to IPR protection, with high awareness among its citizen on the importance of IPR protection, exceeding that of China who's also a highly innovative country.[38] South Korea is also grappling with the urgent needs of analyzing legality of copyright protection for AI-generated works. In December 2023, South Korea's Ministry of Culture, Sports, and Tourism, stated that the country will withhold copyright registration for artificial intelligence (AI)-generated content.[39] This approach is said to be a part of the country's upcoming AI copyright guidebook, which would serve as a comprehensive guide for AI businesses, copyright holders, and users, explaining the specifics of the decision and providing advice on how to handle copyright issues in AI-generated content. The basic norms of this goes back to Article 2 of South Korea's Copyrights Act, which governs the examples of works that can be copyrighted.

The patent regime, however, hasn't received the same implications of results from discussions made within the South Korean government, with no indication on the possibility of accepting AI-generated invention shown by the South Korean government yet. To date, the provision used as the basis is still Article 33(1) of South Korea's Patent Act, where 'person' refers exclusively to legal person, not AI. While no further confirmation has been made, this legal basis still stands similar to what Korean Intellectual Property Office (KIPO) has made to WIPO. The comment ultimately highlighted that AI can create inventions with less effort than humans, therefore giving protection, particularly that with the same duration with human-made inventions is necessary. This also implies that South Korea is still open to potentially giving the

[38] Sun et al., "Understanding Attitudes towards Intellectual Property from the Perspective of Design Professionals."

[39] Minseo Park, "South Korean Government Takes a Stance: AI-Generated Content Denied Copyright Registration," KoreaTechToday, December 2023.

protection to AI in the future.

However, early in 2024, KIPO recognized a movie fully generated by AI for the first time in the country, and the second time in the world.[40] The key consideration for the recognition of this film as a copyrighted work falls within the editing required. According to KIPO, this fits the criteria of 'human intervention', therefore making it eligible for IPR protection. Ultimately, this serves as a precedence for the future of AI-generated works in South Korea, as a country with advanced creative industry, promoting Korean culture and influence globally.

Normative Restriction, Classification, and Construction of Artificial Intelligence in Indonesia's Intellectual Property Law Framework

The continuous development of IPR regimes can be attributed to need to adapt to digital transformation, specifically in IPR-intensive industries such as the creative sector.[41] Unfortunately, it still lags behind the rapid advancement of digital technologies due to the complex technical aspects of transformations. This is particularly evident in Indonesia, where the growth of technological developments is compounded by political constraints, leading to a slower legislative pace.[42] It is worth mentioning that Indonesia has made recent efforts to speed up legal developments in response to the new normal brought on by the COVID-19 pandemic. This is attributed to the widespread adoption of technologies that enable people to avoid social interaction without reducing productivity, reducing the spread of the virus.[43] There is also a widespread perception in mainstream media that government institutions are too inflexible to keep up with the rapid changes. This is often seen in

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[40] Semin Jang, "국내 생성 AI 영화 '저작권 첫 인정'...세계 2 번째 사례 < AI 기업 < 산업 < 기사본문 - AI 타임스," AI Times, January 2024.

[41] Raffaele Trequattrini et al., "Intangible Assets Management and Digital Transformation: Evidence from Intellectual Property Rights-Intensive Industries," *Meditari Accountancy Research* 30, no. 4 (July 14, 2022): 989–1006, https://doi.org/10.1108/MEDAR-03-2021-1216.

[42] Ibnu Sina Chandranegara and Muhammad Ali, "Reorienting Legal Education Under the Fourth Industrial Revolution," in *Proceedings of the International Conference on Community Development (ICCD 2020)* (Paris, France: Atlantis Press, 2020), 321–24, https://doi.org/10.2991/assehr.k.201017.071.

[43] M Trihudiyatmanto, "The Implementation of PSBB on the Development of Retail MSMEs with the COVID-19 Pandemic as a Moderating Variable," *Journal of Islamic Economics, Management, and Business (JIEMB)* 2, no. 2 (December 25, 2020): 91–108, https://doi.org/10.21580/jiemb.2020.2.2.6755.

the slow development of IPR laws.[44]

Despite the ongoing digitalization process and the growth of the tech start-up culture, there has been little effort to regulate AI. This is contrary to the rising trend of the digital age, where the focus on data innovation and R&D has a significant impact on the adoption of AI technology.[45] The evolution of the relationship between AI and human values has influenced the competition for the technology, where government policies play a crucial role in related processes.[46] In the comparison of the previous chapter, two IPR regimes emerged as those most frequently associated with the development of the IPR legal framework on AI in the nations shown in the table. The next question is centered on which is better for regulating AI for intellectual property law between copyrights and patents. The capability provided by AI can also end up giving a monopoly to the inventors. This can subsequently limit the chances of humans and legal persons to compete in the market, leading to also a decrease in incentive.[47] Therefore, the normative construction for AI in the intellectual property law framework needs to carefully weigh the risks and potentials.

The often-overlooked aspect of legal evolution is that it arises solely from institutional and continuous efforts of individuals outside the legal sector.[48] In the realm of AI, creators constantly strive for stronger protection of their rights, as exemplified by the widely-known DABUS case, which is referenced in many courts worldwide. Therefore, the legal development of IPR in the context of AI should not focus on insignificant distinctions between elements such as graphics and texts, as the Beijing court did without valid reasoning.[49] Instead of focusing solely on protection, the IPR regimes should consider the incentives that benefit the inventors and harmonize the existing laws.

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[44] Rosa Maria Ballardini, *AI-Generated Content: Authorship and Inventorship in the Age of Artificial Intelligence*, *Online Distribution of Content in the EU* (Edward Elgar Publishing, 2019).

[45] Jan Bosch, "Towards a Digital Business Operating System," in *2019 13th International Conference on Research Challenges in Information Science (RCIS)* (IEEE, 2019), 1–9, https://doi.org/10.1109/RCIS.2019.8877053.

[46] Ali A Guenduez and Tobias Mettler, "Strategically Constructed Narratives on Artificial Intelligence: What Stories Are Told in Governmental Artificial Intelligence Policies?," *Government Information Quarterly* 40, no. 1 (January 2023): 101719, https://doi.org/10.1016/j.giq.2022.101719.

[47] Sofia Adolfsson, *AI as a Creator : How Do AI-Generated Creations Challenge EU Intellectual Property Law and How Should the EU React?* (Sweden: Uppsala University, 2021).

[48] Roberts and Townsend, "The Contribution of the Creative Economy to the Resilience of Rural Communities: Exploring Cultural and Digital Capital."

[49] Kaur and Kaur, "Role of Technology for Equality, Diversity and Inclusivity."

The restriction on regulating AI originates from linguistic norms, as demonstrated in the United States case of DABUS. The Court of Appeals rejected Thaler's argument, stating that an inventor can only be a natural person, as evidenced by the use of gender-specific pronouns such as "himself" or "herself" rather than "itself.[50] Meanwhile, the use of pronouns does not exist in the Bahasa Indonesia language system. Law No. 13 of 2016 on Patents (Patents Law) defined an inventor as “a person or several people who jointly carry out an idea poured into an activity to produce an Invention.”[51] Similar normative indication can also be found in Law No. 28 of 2014 on Copyrights (Copyrights Law), which defined an inventor as “a person or several people who individually or jointly produce a creation that is unique and personal.”[52] This is normatively similar to what the United States and Germany hold as “natural persons” in their respective IPR regimes. Another word used by Thaler as an argument is “whoever”, which can refer to non-human entities. Furthermore, the court mentioned several problems regarding this argument. The use of whoever to refer to non-human entities in the case of patent authorship should inevitably lead back to the Patent Act as it should satisfy the “conditions and requirements of” Title 35 of the U.S. Code, including its definition of “inventor.”[53] In addition, “whoever” is also used to describe matters regarding infringement. The court then argued that according to Section 271, in setting out the constituents of infringement, “whoever” can be repeatedly used to include corporations and other non-human entities. However, none of this gave any room for AI to be included in the use of “whoever”.[54] This is similar to Indonesia’s Patents Law in its criminal provisions, which uses *“setiap orang”* to refer to “natural persons” infringing upon the rights of a patent holder.

For the purpose of classification, it is crucial to distinguish between the copyright and patent regimes based on their protective nature, underlying objectives, and incentives provided to benefit the creators. The main issue in AI-IPR is authorship. While AI technology,

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[50] *Thaler v. Vidal*, 43 F.4th 1207 (Fed. Cir. 2022).

[51] Article 1 Number 2, Law No. 13 of 2016 on Indonesian Patents Law *(Undang-Undang No. 13 Tahun 2016 tentang Paten)*

[52] Article 1 number 2, Law No. 28 of 2014 on Indonesian Copyrights Law *(Undang-Undang No. 28 Tahun 2014 tentang Hak Cipta)*

[53] Article 1 number 2, Law No. 28 of 2014 on Indonesian Copyrights Law *(Undang-Undang No. 28 Tahun 2014 tentang Hak Cipta)*

[54] Article 1 number 2, Law No. 28 of 2014 on Indonesian Copyrights Law *(Undang-Undang No. 28 Tahun 2014 tentang Hak Cipta)*

can certainly be patented,[55] the output brings a different legal conversation. As mentioned before, China permitted AI-generated works to be copyrighted, although the originality ultimately belongs to the human creator.[56] The Beijing Internet Court has combined the research of originality with the extra necessity of human intervention for copyright protection through its judgment.[57]

This is where copyrights and patent laws collide. Referring to the UK's Copyright, Designs, and Patents Act 1988 article 9(3), "In the case of a literary, dramatic, musical or artistic work which is computer-generated, the author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken." The concept of "necessary arrangements" can always be open to many interpretations until a normative explanation is provided. The programmer who wrote the code for an AI system takes the first, necessary step. The curation of the dataset and its use to train the system are additional required steps that can directly affect the generated output.[58]

However, it is essential to highlight that while the generated artwork is protected by copyright, the AI itself is patented.[59] The patent owner automatically obtains moral rights for copyright protection. This raises the question of the purpose of creating AI-generated graphics when users, including paid ones, have no rights to them despite having a strong case of human creative intervention. Current AI technologies that provide these services do not guarantee different graphics for the same keywords, leading to the possibility of infringements even though users have no intention to infringe. While the use of "human creative intervention" terminology in building a normative structure, such as the one in South Korea can be a good way of analyzing the feasibility of IPR protection through the copyright regime, standards regarding this can still change in the future as AI keeps developing.

The technology can also generate or develop a patent, as demonstrated by DABUS, which generated an invention. However, in Indonesia's legal system, AI cannot be recognized as an inventor

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[55] Hidemichi Fujii and Shunsuke Managi, "Trends and Priority Shifts in Artificial Intelligence Technology Invention: A Global Patent Analysis," *Economic Analysis and Policy* 58 (June 2018): 60–69, https://doi.org/10.1016/j.eap.2017.12.006.

[56] Zuo, Strauss, and Zuo, "The Digitalization Transformation of Commercial Banks and Its Impact on Sustainable Efficiency Improvements through Investment in Science and Technology."

[57] Zuo, Strauss, and Zuo, 11028.

[58] Kucukali.

[59] Trihudiyatmanto, "The Implementation of PSBB on the Development of Retail MSMEs with the COVID-19 Pandemic as a Moderating Variable."

and DABUS would not be able to acquire authorship according to the Patents Law.[60] It remains unclear when AI can exercise the rights of a patent owner, such as licensing. A license is defined as permission granted by a patent holder, either exclusively or non-exclusively, to a licensee through a written agreement, allowing the use of a protected patent within a specified time and under specific conditions."[61] Furthermore, the Patents Law makes it clear that "person" refers to "individuals or legal entities".[62]

Works generated by AI can only be credited to a natural person, as a patent or copyright. However, the patentability or copyrightability of these works still remains unclear despite the continuous debates. The main challenge is to find a way to support AI advancements without causing monopolies in the creative market and stifling creativity. Specifically for Indonesia, there needs to be a normative framework that views AI as a tool for market improvement, rather than just a means for increased incentives. Future legal norms for computer-generated works in patent and copyright regimes should consider the elements of AI and its services as a complete system of the creative process, similar to China's Revision of Patent Examination Guidelines 2020. Since it is unknown how AI can exercise the rights of an author, the existing legal definitions of "inventor" or "author' should remain unchanged. The normative structure should focus on the incentives and rights of the people involved, rather than on complex technical interpretations. Most importantly, since these rights cannot be exercised in the case of existing AI artwork generators, their works should not be copyrighted.

FIGURE 2: Comparative outlines of approaches to AI

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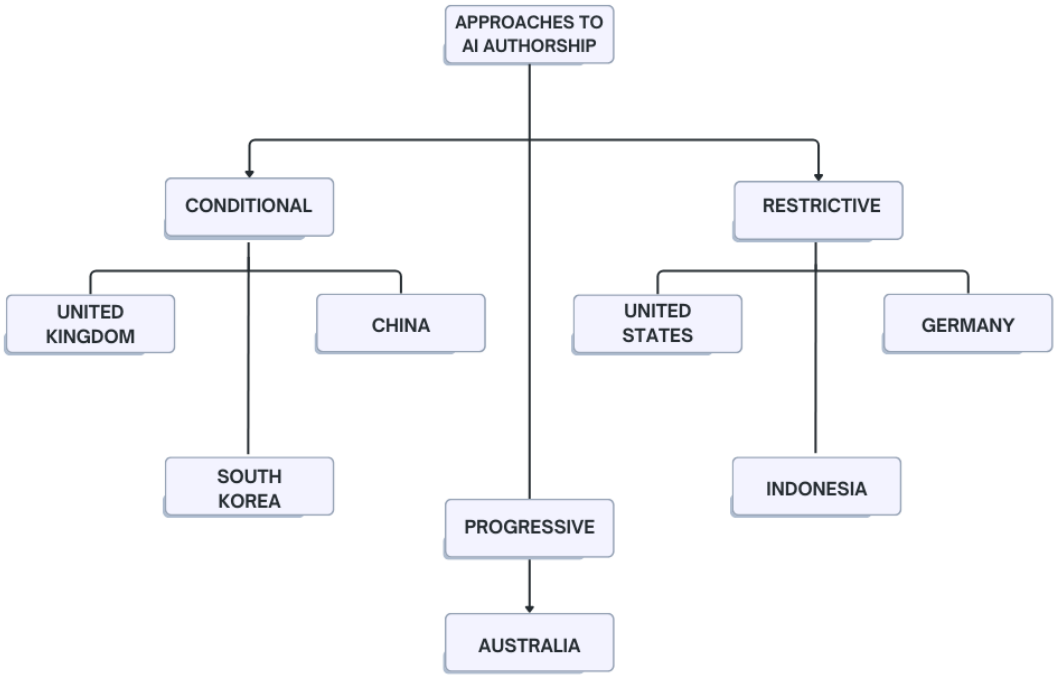
[60] Divya Samriti and Rajesh Kumar, "Patents and Its Implementations in AI," *SSRN Electronic Journal*, 2021, 1–14, https://doi.org/10.2139/ssrn.3947851.

[61] Article 1 number 11, Law No. 13 of 2016 on Indonesian Patents Law *(Undang-Undang No. 13 Tahun 2016 tentang Paten)*

[62] Article 1 number 13, Law No. 13 of 2016 on Indonesian Patents Law *(Undang-Undang No. 13 Tahun 2016 tentang Paten)*



Source: Author's comparative analysis

Figure 2 presents a visual taxonomy of jurisdictional approaches to AI authorship recognition, illustrating the three distinct frameworks that have emerged globally. As depicted, most examined jurisdictions fall under either the Conditional approach (requiring human intervention in various forms) or the Restrictive approach (recognizing only natural persons as authors). The United Kingdom and China exemplify the Conditional model, offering copyright protection to AI-generated works when there is sufficient human involvement, such as "essential arrangements" or editing processes. In contrast, the United States and Germany demonstrate the Restrictive approach, categorically rejecting AI as a potential inventor in patent applications. Only Australia has adopted a Progressive stance, recognizing AI as an autonomous inventor in patent law through its landmark DABUS case ruling. Indonesia's position, aligned with the Restrictive category, reflects its current underdeveloped framework that normatively limits authorship to humans without specific AI provisions. This taxonomical visualization highlights the evolving legal landscape surrounding the feasibility of acknowledging AI in the realm of IPR.

Conclusion

The comparative analysis shows the variety of approaches taken by many countries in regulating AI, which can be considered a challenge that many countries across the globe must carefully consider. The analysis also conclusively recommends that Indonesia should maintain the "natural person" requirement in both its Copyright and Patent Laws, explicitly rejecting the progressive approach exemplified by Australia's DABUS case while strategically adapting its legal framework to accommodate AI-assisted creativity. Rather than pursuing radical redefinition of authorship, Indonesia should focus on targeted legislative amendments that recognize human creative intervention as the essential element for IP protection, similar to South Korea's model, while simultaneously revising incentive structures to promote AI as a tool for enhancing human creativity rather than replacing it. A prudent approach for Indonesian policymakers would involve establishing a standardized framework that clearly delineates the boundaries of human contribution required for IP protection of AI-assisted works, which can be facilitated through the development a certification system that evaluates the degree of human involvement in the creative process. This balanced approach would position Indonesia to harness AI's creative potential without undermining its emerging creative. These suggestions require further testing and analysis, which can serve as the starting point for future research regarding this topic.

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