IP Rights to AI-Generated Works: Barriers Presented by Existing Law and Reformations Needed

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ABSTRACT

Previously we have seen computers as only the aiding tools for different human activities. Modern technological development created computers with Artificial Intelligence (AI) capable to perform works autonomously or with least intervention of human beings. These Ai-generated works resemble human thought-created. The use of AI-capable computers is increasing in different fields of health, commerce, industries, arts, literature, music composition, scientific operations, etc. Consequent to this technological development, the claims for Intellectual Property rights (IP) like copyrights and patents are being raised by several persons or institutions for the AI-generated works as they are produced with their investment and plan. Such claims raised the legal battle which is now at the peak in the 2020s between the modern necessity and the traditional legal base that conceived only the creative works of human intellect (or mind) are eligible for IP legal protection, and not the work machine-generated. This article attempted to analyze some important legal issues centering the IP to AI-generated works, indeterminacy, industrial and commercial necessity, and finding the legal way out to the emerging issues for granting IP to AI-generated works.

Keywords: Artificial intelligence, Intellectual property Law, Copyrights, Patents, IP to AI, and IP law.

INTRODUCTION:

In the progress of time, scientists developed computers enabled with artificial intelligence (AI) whose use is rapidly increasing in industrial, commercial, health, education, entertainment, news, giving important output analyzing data, and many other sectors. These AI-enabled computers or robots have changed the traditional notion of computers from human operated technical assisting tools to the "intelligent machine" capable of functioning autonomously with least human intervention. Their outputs resemble human thought produced works. During the Covid-19 pandemic we have seen the AI-capable robot Sophia and Hanson in Hong Kong giving medical care and customer service. Earlier in 1992, 1995, 2001 several great paintings were created by AI-capable robots AARON, Interactive Robotic Painting Machine and e-David Robot Painting (Moss, 2015). Previously, we could only conceive that the paintings are the expression of human emotional faculties, the depiction of feelings of the human mind that he draws applying the experience gathered with eye and thought. In 2018, the AI-generated painting "Edmond de Belamy, from La Famille de Delamy" was auctioned at Christies New York for price 432,500 USD (nytimes.com). Earlier in 2016 another AI-generated 3D painting named "The Next Rembrandt" was exhibited in an auditorium of Amsterdam publicly in the presence of experts, press personnel, and a great number of other persons (Cohn, 2018).

This painting was made by AI-enabled computer applying the knowledge of its machine learning software acquired from inserted data of 168,263 paintings of a 17th Century's great artist Rembrandt in the Netherlands. Also the example, the novel "1 the Road" was created by AI was published in 2018 by Jean Boite Editions. There are also some books created by or with the help of AI software, a list of such books is provided by "the Research Nest Editorial" (2020).

Presently AI is being used in writing news, music composition, video games, background arts and music, industrial productions, and many more. This fact has been acknowledged by the government policy makers in a number of countries with revising their business, economical and legal policy with aim to be benefitted from the use of AI (e.g. Japan, China, Canada, Australia, and many other countries). To gain a fair idea about it may be seen WIPO database under title "Artificial Intelligence and Intellectual Property Strategy Clearing House" (find here). Consequent to the increase of the use of AI in creative works in different fields, a very complicated legal debate arose on the claim of Intellectual Property (IP) rights (both patent and copyrights) over those works which grants monopoly to the use, edit and commercialization of the work to a person behind the creation. To serve the economic and social interests from the use of AI this debate has now become an important one for the policy makers in national and international levels.

The traditional legal doctrine and interpretation of IP law conceived the Patent and Copyright are attributable to the original works of intellectual labor of the human mind only. Whereas on one side this is a barrier in getting the said IP rights, on the other hand there is the extreme business necessity for granting IP rights to AI-generated works to the claimants who have invested their huge money, labor, working team and plan in those creations using the AI. This article attempts to examine the legal issues for IP rights to AI-generated works with analysis of traditional legal notion and barriers presented by it, technical and legal indeterminacy hindering the formulation of appropriate policy reforming the law, courts approach, ongoing reformative steps, and action plans in national and international contexts, and how to find the possible way out of those central legal issues (Munshi, 2021).

Main legal debates regarding IP to AI-generated works

The legal debates regarding IP to A-generated works centers on the two main points-

1) Firstly, whether the IP rights (Patents and Copyright) may be granted to the AI-generated works, since under the traditional interpretation of the IP law, the judicial decisions in most jurisdictions of the world have held attributable only for the creation of "intellectual labor", a term which is interpreted with the works of "human mind" only.

2) Secondly, whether solution lies simply in recognizing the AI-generated works as "original intellectual creation" because the question then arises to whom the IP right may be granted for the said works. Certainly the AI-machines can-not be granted such rights as the granting of IP rights involves some other associated rights also, like monopoly of the economic use, right to transfer of such rights to other persons by executing license or assignment deed. For exercising these rights "personhood status" (whether natural or legal) is required. Machines cannot have this status. The further questions then arise, for IP claim in AI-system generated works what extent of human involvement is necessary, the type and form of that involvement required, etc.

3) Thirdly, the machine learning process of AI-enabled computers or robots requires giving a huge number of scanned data of existing works in the relevant fields. This raises the issue whether the scanning of a huge number of copyrighted materials infringes the copyright of another. One of the recent examples of this legal debate raised in the Canadian case *AmelChamandy / Galerie-NuEdge Fine Arts v. Adam Basanta*, (2019)(500-17-104 564-185) before the Quebec Superior Court, the decision is still pending. In the case plaintiff claimed a great amount $20,000 as dam-age for infringing copyright by unauthorized scanning of huge copyrighted material for the machine learning software of an AI-machine.

Barriers presented by traditional legal base granting IP to AI

The basic principle in "Copyright Law" irrespective of country wise variation is that, the copyright exists in

the literary, artistic, dramatic, or musical work that expresses the originality of the author. But the traditional notion of "originality" refers broadly to the "creations of the human mind" only. Whereas neither of the two major documents of international IP law, the Berne and them TRIPS Agreement, (1995) provided the standards for originality requirement, the formulation of it is largely left upon the national laws of countries' themselves to be determined based on their own legal system and to their economic and social policy force. Under the laws of most of the countries of the European Union, Civil Law Legal System and Common Law Legal system the conception of the term originality is attached with the creation of "author's intelligence", in other words to "human mind", and thus it excludes the copyright ability in the work produced by "artificial intelligence (AI)".

As the reference to the said traditional legal base of copy right ability may be quoted from a recent WIPO publication, (2016), "Understanding Copyright and Related Rights" stating that "copyright legislation is part of the wider body of law known as intellectual property (IP) which refers broadly to the creations of the human mind"(World Intellectual Property Organization (WIPO, 2016). The national legislations as well as judicial decisions also echoed with this notion.

For example, The U.S. Reports: Trade-Mark Cases (1879), in commenting on copyright eligibility of works stated that "while the word writings may be liberally construed, as it has been, to include original designs for engravings, prints, etc., it is only as original, and is founded in the creative powers of the mind" (Miller, 1879, at page 94). Similarly the German Copyright Law, 1965 (last amended on May 1998) in article 2(2) of Section II under the head "Protected Works" provided that, "personal intellectual creations alone shall constitute works within the meaning of this Law", thus by use of the term "personal intellectual creations" it excludes any work produced by AI-machine from the IP legal protection. In a recent judgment of the case, known as "DABUS Case", the European Patent Office (EPO) refused two patent applications (EP 18 275 163 and EP 18 275 174) in which an AI system was designated as the inventor. In the applications, the plaintiff as the owner of the AI-machine called DABUS, claimed patent right for the

invention generated by machine's AI-system. As the ground for refusal, the EPO expressed that, "the legal requirement of the European Patent Convention (EPC) that an inventor designated in the application has to be a human being and not a machine". The court further commented that the term "inventor" as is interpreted in the European patent system, as well as in international and national jurisdictions conceived referable only to the "natural person" as the accepted standard.

Next to the said traditional legal predisposition for copyright to human mind only, the another difficulty arises in the copyright claim for AI-generated works in law that the right can be granted to someone who has the "personhood status" (either natural or legal) only, because in legal jurisprudence only "the person" considered as the repository of right and can exercise it. Here it is essential to mention that copyright besides it is a "legal recognition" to its holder the title on "intellectual creation"; it bears some other associated rights also, e.g., its commercialization and different form of economic exploitation like licensing and assignment of the right for its economic exploitation. Now if the copyright for AI-generated works is considered to be granted to the person at whose instance the work has been produced, i.e. the person or team behind the AI-work., the question then will come forefront what type creative involvement that person or team should require in the creating of such AI-system generated works.

Lord Atkinson in Macmillan & Co., Ld v K. & J. Cooper case, (1923) held that for copyright eli-gibility the claimant must prove his exertion of suf-ficient level of "knowledge, labor, judgment or literary skill or taste" in the claimed work, and the standard at which that exertion must be proved is dependent upon each case specific fact. The said legal issues can be resolved only after the clear scientific notation is researched out enquiring into the functional nature of AI-system and the extent of human intervention re-quired in the work AI-system generated, and also the commercial and economic policy determination to be perused on granting such copyright in AI-works.

The existing indeterminacy towards finding prin-cipled legal formulation

The existing indeterminacy towards reaching on the principled legal formulation for granting the patent or

copyright to the works AI-system generated, are discussed under the following heads—

1. Lack of study on the technical mechanism of the AI-system generated works
2. Who is the rightful claimant for copyright in AI-works, the programmer of the AI-system or the user of it?
3. What economic, commercial, and moral aspects are to be pursued in granting the IP for AI-generated works?
4. Whether the scanning of huge data to feed the machine learning software of AI infringes the copyright of another?

Lack of study on the technical mechanism of the AI-system generated works

Firstly, the lack of study clarifying the technical mechanism in the AI-system generated works is a factor obviating the answering the most important legal issue what copyrightable credit can be attached to the human or to the organization's team in AI-generated work; or what type of human or organizational involvement investing "knowledge, labor, judgment or literary skill or taste" required to satisfy legal conditions for copyright of the claimant in such AI-works. Whereas, the originality in the work is the essence of copyright eligibility, the test of "originality" is applied by the courts upon finding the existence of "independent intellectual efforts" applied by the claimant in the work (IceTV Case, 2009, at para 33). Thus for a copyright claim in the AI-system generated works, the legal issue to be determined first is "the type of intellectual involvement" of the person or team behind the said work to justify copyright claim. This is an issue which can appropriately be answered only after the clarification of technical working nature of AI-system and the human or organizational collaboration joined in creating the said work.

The finding of "independent intellectual effort" of person or team behind the AI-work for copyright claim is an important issue, the typical interpretation of which may be presented with reference to the decision in the case *Telstra Corporation Limited v Phone Directories Company Pty Ltd* (2010) (also known as "Phone Directory Case") wherein the Full Federal Court of Australia denied the copyright claim of the organization to a Phone Directory created by the

computer program for lack of proof of substantive human input. The court held that, "whatever else might be said of the kind of efforts required of an author, they must be efforts which result in the material form of the work" (*Telstra Corporation Case*, 2010, at para 104). Thereafter in denying the organization's authorship in the said work the court held that: The difficulty in this case is not that the efforts which might have gone into the production of the galley file could not be sufficient acts of an appropriate quality to count as acts of authorship. Rather, the difficulty is that those tasks were not carried out by humans but by computer programs (*Telstra Corporation Case*, 2010, at para. 114).

The court then concluded that,

> It is essential to a finding of originality for copyright purposes that the work be one that is properly characterized as originating from an author or authors. In my view, the compilations claimed in this case cannot bear that characterization. The contribution of the essentially computer-generated "Book Extract" process was of such over-whelming significance to the expression in material form of each compilation (in the case two compilations were involved for the copyright claim) that none of the compilations can be properly characterized, overall, as a work that originates from an author or authors, even though elements of authorial contribution are present. It follows, in my view, that none of the works can be an original work for copyright purposes. Thus copyright cannot subsist in those works (*Telstra Corporation Case*, 2010, at para 169).

The said judgment makes it evident that, unless the legislation comes into play providing a clear-cut balance between the need of IP claim in the AI-generated works and traditional firmly established notion of authorship requirement, the balancing of which requires first the appreciation of the technical process of working in the AI-system, the legal debate granting or denying the IP to AI will continue to any unending conclusion.

Who should be the rightful person for copyright in AI-works, the programmer of the AI-system or the user of it?

Secondly, indetermination exists on the issue "the person with whom the copyright exists in the AI-generated work, whether it should be the programmer who has programmed the AI-system; or the user of the AI-system creating the work".

To this legal indeterminacy here it is worth referable to "the UK Copyright, Designs, and Patent Act, 1988" which in section 9(3) provides that "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". Similar provisions is also provided under section 2(d)(vi) of the Copyright Act, 1957 of India providing that, "in relation to any literary, dramatic, musical or artistic work which is computer-generated, the person who causes the work to be created" will be treated as author. But both the said legal provisions left it undefined the term "author", whether it is the user of the AI-system or the programmer who has originally programmed the AI-system for such works to be created. If the programmer is considered for IP rights for AI-system generated works, then what will be the economic or commercial incentive to the user of the system who has invested huge money and labor for producing the work using the AI-system, like creating the video games, cartoons, movies, education videos, artistic works, designs, pharmaceutical research, etc? Now-a-days AI-generated music compositions are being added in the videos, cartoons, games, etc. In the said context of commercial and inventive necessity in is important to be determined "where should the IP right to the AI-generated works be allocated as the right place."

What economic, commercial, and moral aspects are to be pursued in the IP law for AI-generated works?
Thirdly, what economic, commercial, and moral aspects should be pursued in the legal policy for granting IP to AI-created works? The lack of such determinations have the impact in finding the appropriate legal framework in this field that will better serve both the interest of the copyright owner and the wider benefit of the society.

Whether the scanning of huge data to feed the machine learning software of AI infringes the copyright of another?

Whether the scanning of huge data to feed the machine learning software of AI infringes the copyright of another?
Fourthly, the copyright infringement issue in the Text and Data Mining (TDM) for the AI's-machine learning process. To enable AI-autonomous work, its machine learning program requires feeding huge text and data. It is done through scanning of huge texts and data from the existing copyrighted materials. The question then arises whether the scanning of huge amounts of copyrighted data for TDM of AI-program's learning process can be treated within the exceptions of copyright violation under the "fair use doctrine". Here it is worth to mention that, the policy in the copyright law giving protection to the copyrighted item is twofold, as it is explained by the Canadian Supreme Court in the case CCH Canadian Ltd v Law Society of Upper Canada (2004) as follows:

> The Copyright Act is usually presented as a balance between promoting the public interest in the encouragement and dissemination of works of the arts and intellect and obtaining a just reward for the creator . . . .

> The proper balance among these and other public policy objectives lies not only in recognizing the creator's rights but in giving due weight to their limited nature.

> In interpreting the *Copyright Act*, courts should strive to maintain an appropriate balance between these two goals (CCH Canadian Ltd case, 2004, at page 350, para 11).

The said balance between the two goals of the copyright law has been provided invariably under the legal scheme of Copyright Law in all the national jurisdictions by providing for rights and obligations both for the copyright owners and the users. The copyright law, in one side gives right to the owner upon his creation defining the scope of the rights exercisable in his copyrighted item, the moral rights, neighboring rights, etc., on the other, it provides for the public users' scope for the use of the copyrighted material defining the acts which are amounted as copyright infringement. The law gives the copyright owner the sole right to produce or reproduce the work, to publicize the work, right to give authorization or license of his copyright, prevent any person from committing acts consis-

ting of infringement of copyright, etc. On the part of the user, the copyright law to facilitate wider social benefit from the intellectual creation (such as research, education, or other *bona fide* non-commercial use), it provides the "fair use conducts" as exceptions to the infringement of copyright of the owner.

Now having regard to the said policy in the scheme of Copyright Law, in relation to AI the issue then required to be resolved whether the scanning of huge text and data from the copyright protected materials for the purpose of feeding the AI's "machine learning program" be interpreted as "fair use" constituting exception to infringement conduct. If it is to be considered as "fair use" for AI's machine learning system, then what will be the justification for it, and what security in such AI's machine learning system will be provided to the copyright owner against unauthorized publicizing or commercial use of his work, and remedy therefore.

The said issue of copyright violation in the AI's machine learning was also raised in a recent Canadian case, *Amel Chamandy / Galerie Nu Edge Fine Arts v. Adam Basanta*, 500-17-104564-185, before the Quebec Superior Court. The decision of which is still pending or not available to be quoted here. In this respect, some principled formulation of law guiding the type and extent of "exploitative use" for AI's machine learning system, and the type of AI's analytical output using that stored data may be treated as not infringement of copyright is worth demanding.

Recently, upon perceiving the great prospect of AI's beneficial use in different fields, like industrial and commercial production, researches in different areas (pharmaceutical, medical, geographical, weather analysis, etc.), news analysis, customer information, and such many other use, the Government authority of different countries stepped forward to revise their TD-M policy to enable the machine learning of AI system. As the reference of this, some country initiatives are mentioned below:

In the UK, the Copyright Designs and Patents Act 1988 was amended in 2014 inserting section 29A that has allowed such data mining to the computerized system. Section 29A(1)(a) provides that the making of a copy of a work by a person who has lawful access to

the work does not infringe copyright if it is done for the purpose to carry out a computational analysis of anything recorded in the work for the sole purpose of research for a non-commercial purpose.

In Japan, the amendment of 2018 to the inserted articles 30-4 in section 3, which allowed the use of copyrighted data even without the authorization of the owner for the said TDM. Especially article 30-4(iii) provides the copyright infringement exception stating the use of data will not infringe the copyright "if it is exploited in the course of computer data processing or otherwise exploited in a way that does not involve what is expressed in the work being perceived by the human senses (for works of computer programming)."

The Text and Data Mining (TDM) exception of copyright infringement has been made under the Estonian Copyright Act, 1992. In 2017, an amendment to section 19(3) provided that, the use of the copyrighted material with due recognition of the author shall not be treated as copyright infringement if it is used for the purposes of text and data mining and provided that such use does not have a commercial objective. For such use even the prior authorization of the author does not require.

Compared to the said TDM policy of some countries facilitating the AI's machine learning process to enable its working, most of the countries copyright legislations fall short providing such provision. For example, in Canada the absence of such provision was recently commented in a web news blog as follows:

> Copyright law crops up because restrictive rules may limit the data sets that can used for machine learning purposes, resulting in fewer pictures to scan, videos to watch or text to analyze. Given the absence of a clear rule to permit machine learning in Canadian copyright law (often called a text and data mining exception), our legal framework trails behind other countries that have reduced risks associated with using data sets in AI activities (Geist, 2018).

Also, such lacks in TDM policy exists within the EU legal framework which is commented in a publication of European Parliament (February, 2018) commenting that,

Legal uncertainties concerning the treatment of TDM practices under EU and national laws may inhibit the development of TDM in Europe. Other countries, e.g. US, may consider TDM activities as fair use of copyright works. The UK has adopted a specific TDM exception, which allows persons having lawful access to undertake text and data analysis for non-commercial research (Rosati, 2018).

The *Tencent case* decision in China resolving some important issues for IP to AI

Comparatively recent, in China the judicial decision of the case *Shenzhen Tencent v. Shanghai Yingxun*, (Nov 24, 2019) (hereinafter referred to as "*Tencent case*", 2019) found to have brought a reasoned reconciliation between the traditional legal concept of "intellectual creation of human mind" for copyright ability with the claim of such right in AI-generated works. In this case the Shenzhen Nanshan District People's Court of China resolved that "the AI-created works can be copyrighted under Chinese law, just like those created by human beings". For holding this decision, it did not go against the traditional base for copyright eligibility (i.e. must be the original creation of human intellectual labor), but rationalized it to the context of emerging necessity with respect to IP claim for AI-system generated work. The Plaintiff Shenzhen Tencent Computer System Co. Ltd., on 20 August, 2018 published an AI-system generated article titled "Afternoon Comment: Shanghai Stock Index Rose Slightly by 0.11% to 2671.93 points, led by communications operations, oil exploration and other sectors". There was a comment at the end of the article that "the article was astronomically written by Tencent Robot Dream writer" (hereafter referred to "Dream writer").

The Plaintiff used the Dream writer's software to collect and analyze the text structure of stock market financial data. Thereafter, the Dream writer's software, by using the said collected data completes the writing and publishes the article in 2 minutes after receiving the data. Thus it was a system managed publishing of the article by the plaintiff to serve the requirement of stock market readers within 2 minutes after the end of the stock market. Shortly after the plaintiff's publiccation, the article with the same title and endnote was published by the defendant Shanghai Yingxun Tech-

nology Co., Ltd. on its website. Hence, the copyright infringement suit was instituted by the plaintiff against the defendant. The case presented the central issue before the court to determine the case whether the plaintiff has any protectable copyright claim in the said AI-system generated work. The court upheld the infringement of plaintiff's copyright by the said Act of the Defendant holding that that, "the news written by Dream writier, an AI writing assistant software of the plaintiff, was under the protection of copyright law. The defendant infringed the copyright of the Plaintiff by copying the news." For holding the copyright existed to the Plaintiff in the AI-system generated work, the Court in the said case reconciled the traditional principle of "originality in the work" for copyright claim (i.e. must be the creation of intellectual labor, the intellect which is attributed to human mind only) with the context of AI-generated work by comparing between "the AI-system created work" and "ordinary written work" stating that - (i) in the ordinary works, the decision making for work and creation are performed simultaneously by the author, i.e., the creativity and creation are synchronized; and (ii) in the AI-system generated works, as in the present case, the author first decides on how to create (i.e. to develop Dream writier software); and then create works as needed afterward, that is creativity and creation are not synchronized. Upon comparing the above, the court held that in both the above stated two modes of creation, the human creative labour is the central force. In the present case, the automatic work of the Dream writer software in generating the article is not to be equated as the produce of its self-consciousness, rather the creation was the output of individual selections and arrangements of the human creator (i.e. the Plaintiff and its Dream writer development team).

ZHOU Bo, the Senior Judge of the IPR Division of the Supreme People's Court of China, in one his written paper on the invitation of the WIPO titled "Artificial Intelligence and Copyright Protection", commenting on the said reconciliation approach of traditional principle in the *Tencent case* decision for holding copyright eligibility in AI-system generated work stated as follows:

The handling of this case is in full compliance with the general rules of judicial practice of copy-

right in China. It reflects the creative intention of human beings, and the copyright of the works formed by it belongs to the corresponding natural or legal person, and the distribution of the right among natural or legal persons can be adjust-ted in accordance with the existing legal norms (ZHOU Bo, 2010).

In support of the *Tencent case* reasoning granting copyright for AI-generated work, he referred to ano-ther subsequent judgment of the case *Gao Yang v. Youku,* (2017), in which the Beijing Intellectual Pro-perty Court decided the issue whether AI generated works are protected by copyright. In this case, the copyright claim of the Plaintiff over the photographs selected from the video picture operating the flying camera and its auto-shots was disputed. The photo-graphs involved an auto-generated process of a flying camera, in which the Plaintiff attached a sports camera to a hot air balloon, released it into the air, and the pictures of the outer space of the earth surface were taken by the Camera automatically in the process of capturing the video by it. The Plaintiff then selected the appropriate screenshots there from to create its photography (ZHOU Bo, 2010). In upholding the copyright of the plaintiff in the photography taken in the said autonomous process, the court held that,

> Although the camera was out of human control during the automatic overhead recording process, there was human intervention, selection of and judging factors such as camera and shooting angle selection, video recording mode, video display format, sensitivity and other shooting parameters. All are considered to be set in advance, therefore, screenshots selected from videos taken automati-cally by the camera constitute photographic works, and the unauthorized use of this picture by others constitutes an infringement of the copyright of the Plaintiff's photographic work (ZHOU Bo, 2010).

WIPO initiative towards modernizing the IP law for AI-autonomous works

The World Intellectual Property Organization (WIPO) recognizing that artificial intelligence (AI) emerged as a general-purpose technology with widespread appli-cations throughout the economy and society, started wide range conversation with different stakeholders, policy makers, legal experts, and concerned persons

towards developing guiding framework for Intellectual Property (IP) Law (hereinafter referred to "WIPO Con-versation"). At the pre-consultation stage, the initial lead of this legal framework development pro-gram by WIPO was taken with holding the "Meeting of IP offices on ICT Strategies and AI for IP Adminis-tration" on May 23-25, 2018 (WIPO, May 23-25, 2018).

Thereafter, on September 27, 2019 it held "WI-PO Conversation on IP and AI First Session" (WIPO, 2019a). Following this on December 13, 2019 it pub-lished the "Draft Issues Paper on IP Policy and AI" (hereinafter referred to as "WIPO Draft Issue Paper") (WIPO 2019b), and on May 29, 2020 published "Re-vised Issues Paper on IP Policy and AI" (Hereinafter referred to as Revised Issue Paper) (WIPO, 2020). As part of this continuing consultation process, the 2nd and 3rd session was held on July 7-9, 2020 and No-vember 4, 2020 respectively.

The 4th session of this continuing WIPO consultation was stated to be held in 2021, but the date is un-confirmed. The above mentioned WIPO Issues Papers (i.e. the Issue Paper dated December 13, 2019 and the revised Issue Paper dated May 29, 2020) was intended to collect comments from wide range of concerned persons upon different out-lined issues considered necessary to be determined towards reaching the prin-cipled formulation of IP legal policy for AI-generated works. In the following briefly quoted some of the issues for consultation stated in the Revised Issues Paper of May 29, 2020 (WIPO, 2020).

IP Issues on patents to AI-generated Works

a. Do AI-generated inventions require patent pro-tection or a similar incentive system at all?

b. Whether the human being required being men-tioned as inventor or should the law permit the AI application as the inventor?

c. If the human inventor is required to be named, should the AI-generated invention fall within the public domain for use; or should the law devise an alternative method for determining the human inventor behind the work?

d. If an AI application is permitted to be an inventor should the AI application be considered a sole inventor or should joint inventor ship with a human be required?

IP Issues on copyright and related rights to AI-Generated work

a. Do AI-generated works require copyright or a similar incentive system at all?

b. Whether the AI-generated works are eligible for copyright protection as original literary and artistic works? Whether the human creator required it?

c. Whether the AI-generated works can be considered original?

d. In whom the copyright should be attributed if the AI-generated work is considered copyrightable? Should consideration be given according to a legal personality to an AI application where it creates original works autonomously so that the copyright would vest in the personality and the personality could be governed and sold in a manner similar to a corporation? How would this interrelate with moral rights?

e. If copyright can be attributed to AI-generated works, should related rights extend to sound recordings, broadcasts, and performances?

f. If a human creator is required, who are the different parties involved in creating an AI-assisted work and how should the creator be determined?

g. If the AI-generated works are considered not copyright able, whether it will lead to concealment of the involvement of AI in creating the work? What system would be applied to detect that concealment?

CONCLUSION:

In response to the perceived necessity of the increasing use of AI-system, the Government authority of many countries and policy makers at national and international levels started revising their IP policy to overcome the legal barriers for granting the IP to the AI-system generated works. The granting of the IP rights (copyright and patent) to the creator is not merely for giving recognition to the author or creator to be identified with the work, it is also important for promoting commerce, industry and investment. This right is the key incentive to the investors to invest their huge money and labor to such creative works and their dissemination for public use. In concluding the discussion of this article about the legal barriers, their roots, issues faced by the judicial and administrative authority, lack of technical and policy research in this area, and their impacts towards reaching a principled formulation of IP legal framework for AI-works, here it is worth referable to recent judicial decisions in China providing reasoned guideline towards reaching a definitive solution. The judicial approach in two cases discussed above, *Shenzhen Tencent v. Shanghai Yingxun*, (Nov 24, 2019) and *Gao Yang v. Youku* (2020) has been the pioneering in formulating the reasoned basis for granting IP to AI without reversing the traditional legal base of IP Law. Another thing which is worth mentionable here is that, though generally the author or the creator of a work is the first owner for copyright, the existing law of different countries already provided provisions for granting the ownership of IP right (e.g. copyright) to a person other than the creator under some excepted circumstances. For example, where the work is created by a person under the employment contract, the copyright for the work is given to the employer; where the "address or speech" is delivered by a person on behalf of other person, the copyright of it is given to that other person on whose behalf it is so delivered, or to the person who had made arrangement for "address or speech" to be so delivered; or to the person on whose premises such address or speech delivered. Reference of those may be found under section 17 of the Indian Copyright Act, 1957; article 15 of section 2 of the Japanese Copyright Act, 2018; Section 35(4), (5), and (6) of the Australian Copyright Act 1968, etc. Such instances under the existing law may also be applied in resolving claim of IP rights for AI-generated works.

CONFLICTS OF INTEREST:

The authors hereby certify that there is no conflict of interest with contents of this research work.

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