On the Application of the Principle of Protecting Prior Rights in Invalidation Cases Where Design Patents Conflict with Copyrights

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1. Introduction

In the intellectual property field in China, copyright aims to protect intellectual achievements that are original and reproducible in tangible forms in the fields of literature, art and science, and design patents provide protection for new designs of the shape, the pattern, or their combination, or the combination of the color with shape or pattern, of a product, which creates an aesthetic feeling and is fit for industrial application. Although subject matters protected by copyright and design patents are different, they both intend to protect intellectual achievements with certain artistry (visually aesthetic feeling) and certain degree of creativity (new design) in terms of the pursued value, and therefore may coexist on the same subject matter. However, the two types of rights will inevitably overlap in protection and conflict with each other due to the differences in the term of protection, scope of protection and method for protection.

At present, when these two types of rights are in conflict, according to the relevant provisions of the Patent Law and the Guidelines for Patent Examination [1] (hereinafter referred to as the "Guidelines"), the patented design shall not be in conflict with the legitimate rights obtained before the date of filing by any other person, which means that in the patent invalidation proceedings, the principle of protecting prior rights is adopted to balance and coordinate these two types of rights. However, the Patent Law and the Guidelines only give general provisions regarding the principle of protecting prior rights in the event of conflict of rights. With the increase in the number of cases involving conflicts between design patents and copyrights, a series of problems have occurred in patent examination. Therefore, it is necessary to clarify the application of this principle in patent invalidation proceedings, so as to unify the examination standards, maintain the authoritativeness and stability of administrative procedures, and provide clear guidance to the parties concerned. In view of the connotation of protecting prior rights and starting from the substantive requirements for protecting prior rights in the patent invalidation proceedings, the following will clarify the key points in the examination of "prior" "rights" in the case of conflict of rights, so as to further improve the examination standards and achieve balanced development of intellectual property rights.

2. Connotation of protecting prior rights

The principle of protecting prior rights, which originated from the civil law system, means that where there are conflicting intellectual property rights co-existing on the same subject matter, according to the order in which they were acquired, the first acquired right should be protected, and the creation and exercise of the subsequent right should not infringe on the prior right of others that has already been acquired and protected by law [2]. This principle embodies the "first come, first served" spirit, which means that protection is conferred on the right of someone whoev-

er obtains it first.

As for the principle of protecting prior rights, it mainly comprises the absolute protection principle and the relative protection principle currently in the world. The absolute protection principle emphasizes that the prior rights are absolutely superior to the subsequent rights, and the relative protection principle means that the prior rights are superior to the subsequent rights only under certain conditions. However, no legal rights are absolute rights, and rights must be exercised within the boundaries set by law. In cases involving conflicts between design patents and other intellectual property rights, the legislation in China only defines the prior rights as "the legitimate rights obtained before the date of filing by any other person". The grant of patent involves the balance between the public interest and the patentee's interest, and resolving the conflict of rights is essentially to seek the balance between the interests of the right holders, as well as between the interests of the right holders and the public interest. Thus, when resolving the conflict of intellectual property rights, we should take into account the principle of balance of interests and the principle of good faith on the premise of respecting the independence of rights. For this reason, the relative protection principle is usually adopted.

Whether design patents conflict with other rights should be judged on the basis of whether the exercise of the design patents infringe on the prior rights. Different types of prior rights dictate different standards for judging the establishment of infringement. [3] Take the design patent and copyright for example. When judging whether a design patent conflicts with a copyright, a standard similar to that for judging whether works are identical or substantially similar should be applied. In comparison with patent rights, copyright is less exclusive. A copyright owner cannot enjoin others from independently creating works that are identical or similar to his works, but can only prohibit others from copying or plagiarizing his works. Therefore, the relative protection principle should be followed in cases involving conflict between design patents and copyrights, and the application of this principle renders the identification of the specific prior copyright more complicated.

In practice, effort shall usually be made to judge the following four elements, i.e., eligibility of subject, legitimacy of object, access and substantial similarity, to determine whether the conflict between the design patent and copyright occurs. Conflict of rights may occur only when both of the following two requirements are met: the prior copyright is valid and the exploitation of the design patent will infringe upon the prior copyright or interests of a particular subject. The eligibility of subject requires the examination as to whether the requestor is eligible to file a case based on the conflict of rights. In the Invalidation Decision No. 20813 and subsequent court judgments [4], the second-instance court upheld the decision of the China National Intellectual Property Administration (CNIPA) and opined, based on the understanding of the overall legislative purpose of the Patent Law, that "through the purpose interpretation, system interpretation and analysis of consequences resulting from law implementation and social impact that may be brought by the decision", the requestor should be confined to the right holder or an interested party, by which the court confirmed the prevailing view on the eligibility of requestor in this type of cases. Where the subject is eligible, examination should also be conducted on the legitimacy of object, i.e., whether the prior copyright is legitimate and valid, out of the principle of protecting prior rights. What follows is the substantive judgment by applying the standards of access and substantial similarity. The rules for judging access and substantial similarity are basically the same as those in copyright-related cases, which will not be reiterated herein. In short, the legitimacy of object embodies the substantive requirements of the principle of protecting prior rights in the patent invalidation proceedings. Then how can we determine that the copyright that gives rise to a conflict is a legitimate right previously acquired? The authors opine that consideration should be given to two aspects, namely "previously acquired" and "legitimate copyright".

3. Judgement on a legitimate right previously acquired

3.1 Judgment on "previously acquired"

The stress is laid on "previously acquired" because the rules in relation to conflict of rights are aimed to avoid the subsequent right from infringing upon the prior right, and whether the exercise of the prior right affects the interest of the subsequent right is not considered. Thus, in terms of chronological order, the right claimed by the requestor must be the prior right. At the same time, in view that when an application is granted, the patent protection will start from the filing date of the application. Thus, the prior right should be acquired at least earlier than the filing date of the

disputed patent, or otherwise it cannot constitute the prior right.

In China, copyrights exist automatically [5], and the date of completion of the work is considered as the date of acquisition of copyright. Therefore, in the judgment on a conflict between the design patent and the prior copyright, the prior copyright actually refers to the copyright on a work completed prior to the filing date of the design patent. It should be noted that since copyright is not an exclusive right, the subsequently finished design *per se* may be a copyright-eligible work as long as it is independently created, and others' works cannot deny the right to acquire the design patent. As such, in order to determine whether the exploitation of the disputed design patent will infringe upon the prior copyright of a particular subject, it is required to judge whether the prior copyright has a direct impact on the independent creation of the subsequent design. If yes, the prior copyright may be infringed upon by the design patent; and if not, the prior copyright and the subsequent design patent can co-exist and will not result in conflict.

In practice, the burden of proving the prior work lies with the copyright owner. Because of the differences in the way and purpose of proving, as to the copyright of a previously competed work, two time points are important to a party concerned: one is the completion time of the prior work, and the other is the publication time of the prior work (the completion time is definitely earlier). As for the former, the copyright owner is usually required to submit original evidence such as the manuscripts and original of the work, together with the evidence proving that the design patent owner may have access to the prior work before the filing date of the patent, so as to facilitate the comprehensive judgment on whether the prior copyrighted work will prejudice the independent creation of the subsequent design. As for the latter, the copyright owner usually only needs to prove by evidence that his work has been made public earlier than the filing date of the patent. In this case, it can be assumed that the patent holder accessed the prior copyrighted work prior to the filing date of the patent, thereby directly determining that the prior copyrighted work destroys the independent creation of the design, with no need of evidence proving the previous actual access. In the cases involving conflict of rights, the copyright owners often use the copyright registration certificate to prove the completion time or publication time. The following is to probe into the probative value of the copyright registration certificate in specific cases.

The copyright registration system is originally established to prove the ownership of rights [6]. Generally speaking, where the copyright registration certificate has no obvious defects and no counter-evidence suffices to deny the authenticity thereof, it shall usually be recognized that the right holder enjoys the rights on the work recited in the registration certificate since the copyright registration organ is a public authority with credibility. The copyright registration certificate usually clearly states three time points, which are respectively the date when the work was completed, the date when the work was first published, and the date when the work was registered, wherein the first two dates are the time points declared by the registrant, and the last date is the time point registered by the copyright registration authority.

The first two dates are subjective, the authenticity of which usually need to be proved by other corroborating evidence. Although the latter date is objective, it needs to be noted that where the date of registration is earlier than the filing date of the design patent, it can be deemed that the work was completed earlier, but the date of registration is not equivalent to the date of publication. Take the Invalidation Decision No. 55284 [7] for example. The requestor claimed that the copyrighted work with the registration number of Qianzuodengzi-20-00047727 has been disclosed before the filing date of the disputed patent. The copyright registration certificate submitted by the requestor was issued by the Guizhou Copyright Administration, indicating that the work was completed on 16 January 2020 with no record of the date of first issue/publication/production, and was registered on 2 July 2020. The challenged patent was filed on 3 July 2020. It can be seen that the work has been registered prior to the filing date of the disputed patent. Although "registered works should be managed by computer database and available to the public" [8], the provisions set forth by the local competent authorities in China are inconsistent in terms of what and how to make registered works public. Some authorities publish, on the Internet, only bibliographic information, such as the title and number, of works, rather than the specific content thereof. Some publish the specific content of works conditionally, for example, only the work samples which are choosen to be published at the time of applying for registration of the work are published. Some only allow copyright owners and their attorneys or third-party judicial authorities to conduct the on-site inspection of the

work samples. For this reason, the date of registration on the copyright registration certificate shall not directly equal to the date of publication of the work. Therefore, the collegial panel drew the conclusion that in consideration of the above uncertainties, the registration date on the copyright registration certificate cannot be regarded as the date of publication of the work without further evidence proving that the specific content of the work is actually publicly accessible, such as available on line or to anyone for inspection. It can thus be seen that the registration date on the copyright registration certificate only means the date on which the author registered his work with the Copyright Administration, and the date of publication of the work should generally be determined on the basis of the "date of first issue/publication/production" on the copyright registration certificate, together with other evidence.

Noteworthily, the registration date on the copyright registration certificate being later than the filing date of the patent does not mean that the date when the work was actually completed must be later than the filing date of the patent. Take the Invalidation Decision No. 52717 [9] for example. The requestor argued that although the registration date (26 July 2019) on the copyright registration certificate No. Guozuodengzi-2019-F-00847061 was slightly later than the filing date (23 July 2019) of the challenged patent, the picture attached to the copyright registration certificate is exactly the same as the picture in the WeChat chat log dated 29 May 2019 (which is about the copyright registration matters between the legal representative of the requestor's company and an employee of an intellectual property agency), which means the work has actually been completed on 29 May 2019. The collegial panel ended up with the conclusion that on the basis of the authentic WeChat chat log and in view of the identicalness between the picture of the work attached to the copyright registration certificate and the picture shown in the chat log, it can be determined that the work was actually completed on 29 May 2019 that is prior to the filing date of the challenged patent, and constitutes a legitimate right previously acquired by others in the sense of the Patent Law.

As a matter of fact, with the development of new trends and new formats, the prior right holder can not only prove the time for acquiring the prior right by the copyright registration certificate together with other evidence, but also prove the prior completion and publication of the work with the help of evidence collection, fixation and anti-tampering means such as electronic signatures, trusted timestamps, hash value verification or blockchain, or services of qualified electronic evidence collection and retention platforms with high credibility, in a bid to save time and monetary costs and reduce the adverse consequences of loss of evidence.

3.2 Judgement of legitimate copyright

The reason to place stress on legitimate right is that the right that gives rise to the conflict of rights must first be a legitimate and valid right. If the prior right has already expired before the grant of protection for the subsequent right, no conflict of rights will occur. Therefore, in terms of validity, the prior right is required to be legitimate and valid at least on the filing date of the patent in suit. As mentioned above, in practice, the copyright owner in a case involving the conflict of rights usually submits a copyright registration certificate to prove that the registered item is a work. However, in China, copyright registration is voluntary and undergoes no substantive examination, so the copyright registration certificate is only a preliminary proof of copyright ownership voluntarily obtained by the right holder. For this reason, the copyright registration certificate does not necessarily prove that the registered item is a work. No matter with or without a copyright registration certificate, where the copyright holder claims the prior copyright according to the Patent Law, the claimed work must comply with the basic requirements for a work, i.e., it should be independently created and have minimum creativity.

The requirement for independent creation means that the right holder should create the work independently, and shall not plagiarize or copy elements from the public domain. The prior right holder bears the burden of proving whether the work is independently created by, e.g., the copyright registration certificate or original manuscript. Relatively speaking, there are in practice few disputes over whether prior works are independently created, therefore this issue will not be discussed in detail herein. The requirement for having minimum creativity means that the work should embody the creator's unique intellectual judgment and choice, and reach a certain level of creativity. In patent invalidation proceedings, this is often a difficult issue in the judgment on whether the prior work is legitimate and valid. Due to the numerous types of works, this article is only going to delve into the requirements for creativity of prior rights that are most commonly seen in patent invalidation proceedings, including graphic works that mainly involve

words, numbers, letters and related patterns, three-dimensional works of applied art and parts of a work.

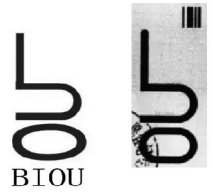
3.2.1 Graphic works that mainly involve words, numbers, letters and related patterns

Although the creativity of graphic works that mainly involve words, numbers, letters and related patterns should not be judged by artistic standards, such works are still required to be aesthetically appealing to the public with their natural appearance, which sets a high requirement for creativity. If a work is merely made of a simple combination of lines or known ordinary words, numbers, letters and related pattens or simple deformation thereof, it may not constitute an artwork as it cannot be distinguished from the expression in the public domain, and cannot reach the degree of creativity as required by the originality of the artwork.

Disputed patent Prior work

Fig. 1

Take the Invalidation Decision No. 28680 and subsequent court judgement [10] for example (see Fig. 1). The CNIPA deemed that the disputed patent and the prior work both contain the number "123" and related patterns, wherein the numbers "1", "2" and "3" are commonly used numerals in a non-original font, but the specific arrangement of height-varying numbers and the figure around the top of the number "1", which means the color scheme of various parts, constitute the original design portion of the prior work, which is therefore used as the main part for comparison. The court held that although the specific arrangement of the number "123" and its pattern and the figure around the top of the number "1" are choices made by the designer, these choices are not substantially different from existing expressions of the numbers, nor did they embody the designer's unique intellectual judgment and selection or meet the requirement for creativity. Hence, the number "123" and related patterns do not constitute a work in the sense of the Copyright Law.



Disputed trademark Prior work

Fig. 2

Take the Civil Judgment No. Yue73minzhong 506 / 2017 [11] for example (see Fig. 2). The second-instance court held that this pattern is composed of English letters "b" and "o" arranged one on another. Although the letters are transformed, such transformation is not creative enough to make the pattern a work of plastic art. Judging from its appearance, the pattern does not show the creator's unique creativity and idea in terms of aesthetics, and lacks the aesthetic significance of an artistic work. Meanwhile, since works are used to express authors' thoughts and emotions or convey certain information, they must be of a certain length. Simple letters or words or combinations thereof render it difficult to fully express the creators' thoughts and emotions or convey certain information in most cases. Hence, the disputed pattern was not found as a work.

3.2.2 Three-dimensional works of applied art

According to different meanings of the term under patent law and copyright law, three-dimensional works of applied art can be understood from different perspectives of law, since they are both practical and artistic and integrate technical features, design features and expression of content. In consideration of the legislative purpose, the patent law aims to protect works of applied art in entirety, to which both practicality and artistry are indispensable, whereas the copyright law provides protection for the artistry, rather than practicality, of the works of applied art.

The authors are of the opinion that as for the visual appearance of works of applied art, although the design features primarily decided by technical functions have a relatively small impact on the overall visual effect in design comparison under the patent law system, they shall not serve as the basis for determining the scope of protection of the work in the comparison between the design patent and copyright that are in conflict. Instead, consideration should be given to the limitation on expression, i.e., how limited are the means to express certain content, such as personalized choice, selection, arrangement and design, thereby deciding the degree of creativity. When evaluating the creativity of aesthetically appealing design features, account shall be

taken of whether such design features are different from the existent artistic works, as well as from works of applied art of similar kinds in terms of three-dimensional appearance. To put it another way, the works of applied art, if qualified as works of art, must be so highly artistic that the public will appreciate the work as an artistic creation from the aesthetic perspective. Products which do not reflect the creators' unique artistic ideas, but only demonstrate certain fashion trends or the appearances of which are limited by practical functions should be regarded as industrial products that may be protected by design patents.

Prior work

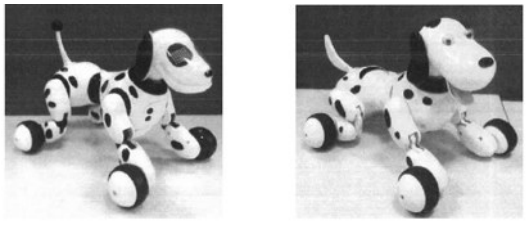
Fig. 3

Take the Invalidation Decision No. 566367 [12] for example (see Fig. 3). The CNIPA held that if an industrial product is original, artistic, practical and reproducible, and the artistry and practicality can be separated, it can be identified as a work of applied art, and the original artistic and aesthetic parts can be protected under the copyright law as a work of art. Although the air cooler in this case incorporates the designer's aesthetic pursuit, it cannot meet the requirements for creativity of a work of art. The public will regard it as an industrial product rather than an artistic work. Therefore, the overall appearance of the air cooler does not meet the artistic requirement for creativity of an artistic work, possesses no originality, and is not protected by copyright.

Prior work

Fig. 4

Take the Civil Judgment No. Luminzhong 242/2022 [13] for example (see Fig. 4). The court held that the roller in suit is a construction machine with practicality as its main function. Thus, in the R&D and manufacturing process of the roller, practical functions, effects and related performance parameters are the main goals pursued by designers or manufacturers. The resulting artistry of the roller is only a byproduct produced in its design process, and inevitably embodies and is restricted by the corresponding practical functions. The original and artistic design elements of the roller in suit as claimed by the plaintiff Roadway are the streamline shape and openwork design of components of the roller, as well as the shapes and division ratio, matching, and installation and embedded positions thereof. Although the aforementioned design elements are of certain artistic value, these artistic elements are arranged mostly for the sake of practical functions such as ventilation, component matching, installation and embedding, and enhanced safety, and have been integrally combined with the practical functions of those components. Changing the artistic elements of the components will inevitably hamper the realization of the practical functions. Hence, the roller in suit does not constitute a work of art protected by the copyright law.



Disputed product Prior Work

Fig. 5

Take the Civil Ruling No. Zuigaofaminshen 4397 / 2018 [14] for example (see Fig. 5). The first-instance court stated that the practicality-related technological expressions of the Zoomer robotic dog should be excluded from protection, and only the artistic aspect can be protected; or otherwise, the underlying technical solution would be protected through the protection of the technology-related expressions. For this reason, the joints and spherical casters of the Zoomer robotic dog, which are technology-related designs for the sake of function realization, should not be protected. The second-instance court and the Supreme People's Court both reasoned that, in view of the limitation on expression as a criterion, the specific joints and spherical casters of the Zoomer robotic dog can be expressed in rich and diverse forms, so their current expression has artistic value,

and can be regarded as the content of the work. Meanwhile, the contour and color combinations of the Zoomer robotic dog are personalized artistic interpretation of natural elements, presenting an aesthetically appealing artistic image. In comparison with other toy dogs, the Zoomer robotic dog is obviously distinct in terms of posture, dimension ratio, anthropomorphization, head modeling, facial expression, body patterns, and the like. It was concluded that the design of the Zoomer robotic dog meets the requirement of creativity under the copyright law.

3.2.3 Parts of a work

If a part of a work itself meets the requirement for creativity of work, it alone can be protected by copyright.

Left view of the disputed patent | Prior work 1 | Prior works 2 and 3 | Right view of the disputed patent

Fig. 6

Take the Invalidation Decision No. 45802 [15] for example (see Fig. 6). The CNIPA stated that as far as paper-cut works are concerned, how to abstract daily things through lines, how to exaggerate local features, where to leave blank spaces, the proportion and size of blank spaces, and where to make lines connected are all original contents created by paper-cut artists. Although "Shanghai Nursery Rhymes" is in a traditional folk paper-cut art style, each paper-cut figure is a specific character in a comprehensive context including, among other things, different facial expressions, postures, costumes and props according to the general cognition of the public. These specific details all embody the artist's own creation. Each character in the paper-cut work not only constitutes a part of the entire paper-cut work "Shanghai Nursery Rhymes", but also presents each figure and the surroundings fully and independently. Hence, each character can also enjoy copyright separately.

As known from the above, in the cases involving a conflict between the design patent and copyright, if no requirement were set for creativity, a huge number of less creative "works" would be protected by prior "copyright", which would give rise to imbalance of interests between the prior right holders and the public. Both copyright and design patents intend to protect innovation. No matter which legal protection model is adopted, the ultimate goal is to provide protection for innovations with certain creativity made by designers or creators. Given that the original intention of establishing laws is definitely to follow the respective logics of laws, different objects are subject to different protection and regulation by different laws. The requirement for creativity of prior works can not only ensure that less creative works cannot be protected as prior legitimate rights, but also contribute to adjusting the balance between two legal systems of design patents and copyrights.

4. Conclusion

The principle of protecting prior rights is a crucial principle for resolving intellectual property disputes. In the cases involving conflicts between design patents and copyrights, we need to comprehensively consider a variety of factors, including the order of rights created, the originality of the work, and the differences between rights protection methods. While protecting legitimate and valid prior rights, we adopt the relative protection doctrine, introduce the concept of equity, and consider the original legislative intents to further maintain the order and fairness of intellectual property rights and achieve the balanced development of intellectual property rights. ■

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[1] Article 23.3 of the Patent Law (revised in 2020) stipulates that "any design for which a patent right may be granted must not be in conflict with the legitimate rights obtained before the date of filing by any other person."

It is stipulated in Part IV, Chapter 5, Section 7 that "any other person refers to the civil subject other than the patentee, including natural person, legal person or other entity." "Legitimate right refers to the right or interest which is recognized by laws of the People's Republic of China and is still valid prior to the filing date of the patent concerned. It includes trademark rights, copyright, ... etc." "Obtaining prior to the filing date means that the prior legitimate right is obtained before the filing date of the patent concerned."

[2] Shao Yue and Sun Li (2005). Analysis of conflicts of intellectual property rights and principles for their resolution. *Journal of Tianshui*

College of Administration, 2, 53.

[3] Yin Xintian (2011). *Introduction to the Patent Law of China*. The Intellectual Property Publishing House.

[4] See *Staples, Inc. v. Luo Shikai*, a case involving the invalidation against the design patent No. 200830102005.0, Administrative Judgment No. Jingxingzhong 2901/2016 and Administrative Judgment No. Jingxingzai 6/2018.

[5] Article 2 of the Copyright Law of the People's Republic of China (revised in 2020) stipulates that "[w]orks of Chinese citizens, legal entities or other organizations, whether published or not, shall enjoy copyright in accordance with this Law."

[6] Article 1 of the Trial Measures for Voluntary Registration of Works (published in 1994) stipulates that "in order to safeguard the legitimate rights and interests of authors or other copyright holders and the users of work, and assist in resolving copyright disputes over ownership, and provide *prima facie* evidence for resolution of copyright disputes, these Measures are formulated."

[7] See *Shenzhen Shidaizhongying Intelligent Technologies Co., Ltd. v. Shenzhen Jingqi E-Commerce Co., Ltd.*, an invalidation case against the design patent No. 202030354381.X.

[8] Article 12 of the Trial Measures for Voluntary Registration of Works.

[9] See *Qingdao Zhanshi Meilin Food Co. Ltd. v. Qingdao Beimeilin Foodstuff Co., Ltd.*, an invalidation case against the design patent No. 201930393511.8.

[10] See *Shenzhen Jingbao Food and Beverage Co., Ltd. v. Zhou Yuwen*, an invalidation case against the design patent No. 201330304802.8, Administrative Judgment No. Jing73xingchu 3479/2016.

[11] See *Zhong Limin v. Guangzhou Biou Cosmetics Co., Ltd.*, a dispute over copyright infringement.

[12] See *Guangdong Shunde Rainbow Way Technical Co., Ltd. v. Taizhou Weiye Refrigeration Equipment Co., Ltd.*, an invalidation case against the design patent No. 202030678270.4.

[13] See *Shandong Roadway Construction Machinery Manufacturing Co., Ltd. v. Jining Furd Machinery Co., Ltd.*, a dispute over copyright infringement and unfair competition.

[14] See *Spin Master Co. v. Shantou Chenghai Guangyi Goldlight Toys Factory and others*, a dispute over infringement of copyright on "Zoomer robotic dog".

[15] See *Shanghai Shoubai Cultural Art Co., Ltd. v. Zhang Ping*, an invalidation case against the design patent No. 201430400197.9.

WIPO China: Venture capital metric reshapes WIPO's Global Innovation Cluster rankings

On 1 September 2025, WIPO revealed the ranking of the world's top 100 innovation clusters at the Hong Kong Science Park.

The addition of venture capital (VC) deal activity as a new metric in this year's WIPO Global Innovation Index (GII) Cluster study has reshaped the ranking with Shenzhen-Hong Kong-Guangzhou overtaking Tokyo-Yokohama to claim the top spot and San Jose-San Francisco moving up three places to third position.

Established in 2017, the GII Cluster ranking identifies local concentrations of world-class innovation activity using three key metrics: international patent filings via WIPO's Patent Cooperation Treaty (PCT), scientific publications, and in a new addition this year, the number of venture capital deals.

The global top 100 innovation clusters are spread across 33 economies. Countries with the most clusters are China (24), US (22), Germany (7), India and the United Kingdom (4 each) and Canada, Japan and the Republic of Korea (3 each). Beijing (China) ranks fourth, followed by Seoul (Republic of Korea), Shanghai – Suzhou (China) and New York City (US).

The top three clusters for scientific publications are Beijing (4% of the global total), Shanghai – Suzhou (2.5%), and Shenzhen – Hong Kong – Guangzhou (2.4%). The highest shares of PCT filings come from Tokyo – Yokohama (10.3%), Shenzhen – Hong Kong – Guangzhou (9%) and Seoul (5.4%).

San Jose – San Francisco (US) and Cambridge (UK) rank as the most innovation-intensive clusters relative to their population size, followed by Boston – Cambridge (US), Ningde (China), and Oxford (UK). Ningde's rise to fourth place globally is driven by a sharp increase in patent filings from Contemporary Amperex Technology Co., Limited (CATL), a leading company in energy technologies.

Source: WIPO China