Further Discussion on Construction, Identification and Application of Functional Design Features

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I. The dilemma of functionality doctrine in design protection

Designs as a special kind of subject matter eligible for intellectual property protection are characterized by the multiple roles they are playing since their inception. In terms of aesthetic expression, a design conveys to the public an ornamental effect, which is a form of expressing an artistic concept rather than a technical solution; in terms of industrial application, any pursuit of aesthetic function must be manifested through a concrete industrial product, and its ornamental effect cannot exist independently of the function of the product. This composite attribute of integrating artistry and practicality within the same product highlights the value of the functionality doctrine, namely, separating the protection for designs from that for industrial technical solutions of inventions and utility models, so as to ensure public access to the free domain for design and maintain a balance between rights protection and free competition. Despite this, controversy of various degrees surrounding the functionality doctrine in design protection exists on both legal and practical levels.

1. Differences on legal level

In China, the patent law does not have any provision relating to functional design features, although the Supreme People's Court has clearly stated in the judicial interpretation its view from the perspective of infringement determination that "the courts shall not take into consideration the design features that are mainly dictated by technical function", [1] whereas the administrative authority, from the perspective of validity examination, holds that "a special shape exclusively determined by the function of a product generally does not notably influence the overall visual effect". [2] Comparatively speaking, the former recognizes the composite attribute as an objective characteristic of a design and uses "mainly dictated by technical function" as the criterion for identifying functional design features, while in the determination of the scope of protection, excludes functional design features from patent protection along with other non-appearance features that are not directly observable. [3] In contrast, the latter adopts a more stringent identification criterion as it only recognizes a functional design feature where the shape of the product is "exclusively determined by the function", while in practice takes a less severe approach in that it does not absolutely exclude functional design features from patent protection, but considers their degree of influence on the overall visual effect being different from other features.

These contrasting representations in the normative documents lead to divergence in understanding: one view sticks to the original intention of design protection, holding that a design patent only protects novel and ornamental features of the design, and a functional design should be excluded from design protection. [4] As some local court also clearly stated in its normative document, "in determining the scope of protection of the design patent, contents of design that solely achieve functionality or technical effect should be excluded" [5] Another view is more practical, which holds that all designs of a granted design should fall within the scope of protection, and one should not rashly exclude a subjectively determined "functional design" or

"functional feature" from the scope of protection. [6]

2. Controversies in practice

The above-mentioned divergence has led to further confusion in practice, especially in the identification of functional design features, from which two well-known criteria were generated, namely, "multiplicity of forms" and "no-aesthetic consideration". The former focuses on examining whether the design feature has alternative manner(s) of expression on the premise that the function of the product is not affected, whereas the latter evaluates whether aesthetic appeal is a factor of consideration in the design process of the design feature. Take the administrative enforcement case of *Apple Inc. v. Beijing Intellectual Property Office* (2016), one party contended that the five distinguishing design features identified by the defendant are not functional design features as none of them are features solely dictated by the specific function to be performed by the product with no aesthetic consideration, and moreover, a large number of alternative designs are available. As for the opposite party, it asserted that functional design features refer to design features primarily dictated by the function of a product, and the five distinguishing technical features identified in the appealed decision are mainly designed to realize the function of the product and need not be taken into consideration in the similarity assessment. [7]

II. Teachings from foreign experience

Issues related to functional design features have in fact been one of the thorniest problems to tackle on both theoretical and practical levels, not only in China, but in other jurisdictions as well. Despite this, we can leverage the rich experience from foreign legislation and judicial practice to get a better understanding of the functionality doctrine.

1. European Union (EU)

In the matter of the construction of functional design features, the EU member states, the Office for Harmonization in the Internal Market (OHIM), and the European Court of Justice (ECJ) have been wavering all along. In accordance with the provision on functional design features under Article 8 (1) of the Council Regulation (EC) No 6/2002 of 12 December 2001 on Community designs ("Community Designs Regulation"), a community design shall not subsist in features of appearance of a product which are solely dictated by its technical function. As to the construction of this provision itself, both of the two criteria mentioned above have been applied.

For the "no-aesthetic consideration" criterion, it originated from the AMP case of the UK, in which the court held that the intention of the designer should be taken into consideration when assessing whether a design is solely dictated by the function, that is, whether the designer gives consideration solely to the technical function at the time of design. [8] However, since this approach was considered too subjective and susceptible to abuse, the ECJ, in pursuit of an objective assessment of a functional design, adopted in subsequent cases the "multiplicity of forms" criterion, also known as "alternative designs approach". In *Koninklijke Philips Electronics NV v. Remington Consumer Products Ltd.*, the Advocate General of the ECJ deemed that "a functional design may, none the less, be eligible for protection if it can be shown that the same technical function could be achieved by another different form". That is to say, only when the technical function dictates all the design features can the functionality doctrine be applied to exclude a design from patent protection. [9]

The "multiplicity of forms" criterion narrows down the construction of a functional design to such an extent that people would not hastily exclude a design from protection on functionality grounds. This view was once recognized by many countries across Europe. [10] However, in the Lindner Recyclingtech case of 2009, [11] the Board of Appeal of OHIM responsible for examination and registration of designs in Europe clarified the determination of functional designs for the first time as follows: firstly, the "multiplicity of forms" criterion has its defect because "under extreme circumstances where a product achieving the same function exists in two different shapes only, the granting of protection still hinders technical progress"; and secondly, the "no-aesthetic consideration" approach better reflects the objective of the functionality doctrine, but for the sake of arriving at an objective judgment, "assessment should be made from the perspective of an objective observer, instead of a designer, that is, only when absolutely no considerations other than functionality are discerned in a design (can the design be excluded from protection on functionality ground)." This rule was reiterated in the "Fluid Distribution Equipment" case of 2010. [12]

In March 2018, the ECJ provided the first statutory construction on functional design features in *DOCERAM GmbH v. CeramTec GmbH*, [13] deeming that the "no-aesthetic consideration" criterion, in comparison with multiplicity of

forms, is more in line with the original intention of design protection. [14] In this case, the ECJ referred to the recital on the legislative intent of Article 8.1 of the Community Designs Regulation, which reads, "technological innovation should not be hampered by granting design protection to features dictated solely by a technical function", [15] and inferred that the said article gives consideration to visual factors rather than the availability of alternative designs. The Advocate General of this case explained that in practice, there are products which may contain a specific design feature affording very limited room for variation, wherein the variation will not affect the realization of the technical solution of the products; if the "multiplicity of forms" criterion is adopted, a design can circumvent the restriction of Article 8.1 and get protection as long as there is an alternative design, which then offers a loophole for those who, by applying for registration of these limited design features, render other designs to fall within the scope of protection of their design patents regardless of how hard the other designers work at designing the product's appearance, thus giving rise to a monopoly of the technical functions of products through design protection.

2. The United States

The US Patent Act sets forth no clear provisions for the non-functionality of designs, but distinguishes a design patent from an invention patent by stipulating ornamentality as a patentability requirement. [16] To be eligible for design protection, the subject matter must be an invention created for ornamental purposes. An ornamental feature or design is defined as one which is "created for the purpose of ornamenting" and cannot be the result or "merely a by-product" of functional or mechanical considerations. [17] This explains why the US courts in early judicial practice held negative views toward granting of patents to designs containing functional design features and required that a design be granted only when it consists of ornamental features. [18] However, the court in hearing the case of *in re Garbo* of 1961 took a different attitude, emphasizing that "a design embodying functional features may still be patentable …… although the shape of many products merely embodies functionality, this does not prevent the products from having an attractive appearance." [19]

The US, as a quintessential common law jurisdiction, adopted an inclusive attitude, in contrast with the EU's swinging between the approaches, in the identification of functional design features. It is, however, also because of this attitude that the US has been unable to come up with a clear and unambiguous criterion. In the famous Carlett case of 1964, the US Court of Customs and Patent Appeals held that "when a configuration is the result of functional considerations only, the resulting design is not patentable as an ornamental design." [20] This view, reflecting the principle of the no-aesthetic consideration, is regarded as one of the statutory patentability requirements of the US for designs containing functional features. [21]

In the Avia case of 1988, the US Court of Appeals for the Federal Circuit (CAFC) stressed the significance of the multiplicity of forms criterion, stating that "[i]f the functional aspect or purpose could be accomplished in many other ways that [sic] is involved in this very design, that fact is enough to destroy the claim that this design is primarily functional." [22]

Nevertheless, as a result of the discrepancy in understanding between different courts, the principle adopted in the Avia case was blurred in subsequent judicial practice. In some cases, only when the design of an article was solely dictated by the use or purpose of the article would the design be deemed unpatentable, [23] whereas in other cases, if the design of an article was "primarily functional", it was deemed that patent grant to the design should be refused. [24] It is not difficult to see that when it comes to the criteria for design patent grant, the "solely dictated" requirement is easier to meet than the "primarily functional" one, as in the former the right holders only need to prove the existence of alternative designs, whereas the latter requires further proof on the basis of the former to the effect that a design's ornamentality is not less than its functionality. [25]

To achieve a common understanding, the CAFC provided a more objective opinion in the Richardson case of 2010, "when the design also contains ornamental aspects, it is entitled to a design patent whose scope is limited to those aspects alone and does not extend to any functional elements of the claimed article …… while ……, discounting of functional elements must not convert the overall infringement test to an element-by-element comparison. In evaluating infringement, we determine whether the deception that arises is a result of the similarities in the overall design, not of similarities in ornamental features in isolation. …… the overall visual effect of the Fubar [the accused design] is significantly different from the Stepclaw [the patented design]. [26]

Despite this effort, even in respect of the same criteri-

on, say, "multiplicity of forms", different courts still have divergent views. For instance, in the Ethicon case (2011), while the district court found that the alternative designs provided by Ethicon would "work well" but "d[id] not look alike", and therefore could not be considered suitable alternatives, the CAFC deemed that there is no evidence to support that the aforementioned alternative designs are not feasible. [27]

III. Understanding of "functionality"

"Function" is the beneficial effect that a thing or method brings, and a product is made in order to bring beneficial effect to production or life. As such, a product should first and foremost has its function. [28] Since the function of a product affects the shape, pattern or color of the product's appearance to a large extent, a designer should primarily consider fulfilling the basic function of the product before dealing with how to realize the configuration thereof and what design techniques to employ to embrace the appearance with an aesthetic appeal. However, considering that the original intention of design protection is to encourage the emergence of new designs rather than boost the development of new technologies, and the protection for function should belong to the sphere of the patent law, [29] Article 25.1 of the TRIPS Agreement has stipulated that design protection shall not "extend to designs dictated essentially by technical or functional considerations". This principle, as the exclusion criterion for design protection, is recognized worldwide. In the following we will delve into the connotation of the principle from several aspects.

1. Clarifying the root of protection exclusion

Superficially, the exclusion of functional designs from protection is intended to prevent overlapping with the protection under the patent law. As a matter fact, the underlying purpose of such practice is to avoid technological monopoly and the resulting suppression of peer competition by way of design patent grant. [30] It is noteworthy that some designs may not create a monopoly on the existing technology, if the technology therein is a new technology that can be presented in a certain form of appearance only. For a new technology, an inventor gets a patent grant only after undergoing rigorous examination and assessment of the patent system and satisfying various requirements prescribed by the patent law, and such a grant will not affect subsequent improvements made on that basis for achieving the same function. But things are different for a design. Protection for a design merely covers the shape of a product. If a designer incorporates the function of a product into protection by way of a design patent grant, this will give rise to a situation where subsequent designs will nonetheless fall within the scope of protection of the patented design no matter how hard subsequent designers work, as long as their products achieve the same function, which as a result will hinder the progress of subsequent technologies. The Supreme People's Court also echoed this line of thinking in the "Wind Turbine" case of 2011, holding that "the design of a product, in order to get patent protection, must possess aesthetic appeal in the sense of the patent law, which means that, in addition to the realization of a product's particular function, innovative improvement shall be made to the visual effect of the product so that the product can embody an organic combination of functionality and aesthetics. The design of a product that merely possesses functionality but no aesthetic appeal may seek protection by filing a patent application for invention or utility model, instead of that for design." [31]

2. Understanding the implication of "functionality" from multiple levels

A design is the outcome of functionality and artistry in combination, which is one of the major reasons why it is not protected under the patent law or copyright law. Between ornamentality and functionality, it is not a relationship of dichotomy. Although the key concern of design patent protection lies in its ornamental features, it does not mean that the design must not have any functionality at all because functionality is an objective attribute of a product, which is also the "*de facto* functionality" referred to by Justice Rich in the Morton case. [32] In this regard, the US Manual of Patent Examining Procedure (MPEP) emphasized that there is difference between the ornamental design and the article embodying the design, and the ornamentality of the design should not be denied merely because of the "*de facto* functionality" of the article. [33] What needs to be excluded from the functionality doctrine in design protection is "*de jure* functionality", that is, the product cannot be expressed in an appearance that is not dictated by the function, such as when there is no alternative appearance that can achieve the same function. [34]

In fact, all designs are inevitably *de facto* functional due to their attachment to the products. As to whether a design constitutes *de jure* functionality so that it is excluded

from patent protection or just has a slight impact on the overall visual effect, this requires further consideration. For example, a cup of unique shape should at least serve the function of water holding, which, however, does not affect the cup's eligibility for legal protection by means of its overall aesthetic appeal. Another example is a socket in an electric socket panel in which the socket phase number is highly functional, and the change of a two-phase socket to a three-phase socket is just a variation in the appearance of a component dictated by the function that is prescribed by the national standards in force. This can be regarded as an example of *de jure* functionality whose degree of influence on the overall visual effect of the product requires substantial discounting.

3. Consideration on a case-by-case basis

It has been a tough issue in design protection as regards how to draw a clear line between functionality and non-functionality. Because of the abstraction of the functionality doctrine, some proposed that in light of the difficulty in accurately defining the functionality of a design during the examination of the design, a more objective conclusion may be drawn during the infringement proceedings when an accused infringer challenges the validity of a patented design by making reference to its functionality and comparison needs to be made with the accused design, and as such, postponing the assessment of functionality to a later stage may help minimize errors in the judgment. [35] This proposal seems to be a fairly feasible one. On the one hand, due to the intrinsic characteristics of designs, it is hard to accurately evaluate a design against the patentability criteria during the examination phase, and such evaluation is usually not substantively initiated until comparative study is made during infringement analysis or examination is conducted in invalidation proceedings. The non-functionality requirements may certainly follow this rule, which means that it is not necessary to draw a conclusion on issues such as whether the design is solely dictated by functionality during the examination phase. On the other hand, in the course of a specific case, the court can judge the purpose for which a product is designed and whether there are alternative designs based on the evidence adduced by the parties. In other words, the determination of a functional design should be made on practical rather than purely theoretical basis. [36]

The ECJ has been aware of this issue when hearing the DOCERAM case, and pointed out therein that in respect of the examination according to Article 8.1 of the Community Designs Regulation, it is not only necessary to observe the design in suit itself, but also to take account of all the objective factors involved in the case, such as the focus of advertising, the image of the product in the mind of the public, and the designer's motive in designing the product. This means that it is not possible for us to enumerate a set of abstract criteria in advance and a final judgment must be made by the court upon hearing the individual case. In conclusion, the ECJ held that instead of applying the "objective observer" test that relies on generalization on theoretical basis without addressing the practical situation, the court should take an overall consideration of all factors possibly involved in a case and carry out an analysis to address the specific circumstances of the case.

IV. Identification and application of functional design features

Although accurate identification of functional design features and reasonable grasp of their application in practice fall under an area of theoretical ambiguity and are tricky in practice, they are unquestionably of great significance in the development of a protection system befitting the characteristics of designs.

1. "Aesthetic factor" being not a required condition

One of the reasons why the application of functionality doctrine causes confusion in practice is that we tend to pay too much attention to the manner of construction of functionality, and jump directly to determination of functionality while neglecting a very basic question, which is, what features or factors fall within the scope of functionality. As a matter of fact, be it the requirement of "aesthetic appeal" under the China's Patent Law or that of "ornamentality" under the US Patent Act, they are both highly subjective and easily affected by the artistic taste and aesthetic literacy of those who make the judgment. This explains why the EU received much acclaim when it did not include "ornamentality" in the design patentability requirement in drafting the Design Protection Act. Some even commented that "this obviously is a major advancement of the legal regime for design protection by averting the possibility of muddling ornamentality and functionality". [37]

It is out of the foregoing concern that the OHIM Board of Appeal in the Lindner case expressed the view that requiring a design to embody both "artistic considerations" and "visual appeal" in order to be granted [38] is in conflict

with the statement in the Community Designs Regulation that "(to prove that it is not dictated solely by functionality,) this does not entail that a design must have an aesthetic quality", because the requirement has incorporated contents that do not belong to the functionality doctrine into the assessment of the functionality of a design. In the DOCERAM case, the ECJ reiterated that "in terms of patent grant criterion, (exclusion of functional design features) does not entail that a design must have an aesthetic quality". [39] That is to say, what the "no-aesthetic consideration" criterion concerns is the consideration given to aesthetic factor in the design process, rather than the sense of beauty displayed by the product incorporating the design.

In recent years, some US scholars, perhaps out of the awareness of the above problem, have put forward proposals to request amendment to the ornamentality criterion in the patent law and soften its impact on the determination of design functionality. [40] In the opinion of this author, irrespective of whether the wording of "aesthetic appeal" is to be amended in the China's Patent Law, we should make sure that no assessment should be directly made on the basis of whether a design possesses aesthetic appeal, at least in the judgment of whether the design is ineligible for protection on the grounds of functionality.

2. Assessment based on overall appearance

When determining whether a design is primarily functional or ornamental, the claimed design must be viewed as a whole. This is because in the determination of whether the claimed design is dictated by the function of the product, the ultimate test is on the overall appearance of the product, rather than the functionality or ornamentality of a single feature of the product. [41] The significance of identifying a functional design feature lies in reasonable evaluation of the impact of the functional design feature on the overall visual effect, instead of completely repudiating its value. In the design infringement case of *Apple Inc. v. Samsung* (2015), the CAFC dismissed Samsung's claims that "(functional design features) should be excluded from infringement analysis", reiterating the overall observation rule in the Richardson case, and holding that "solely dictated by functionality" is only to describe the fact, instead of establishing the rule to exclude the element from patent protection. [42]

In the "Wind Turbine" case, the Supreme People's Court emphasized that average consumers are mainly concerned about "the change in the overall visual effect of a design, and will not, because of a change in the technical effect accompanying the variation of a design element, pay extra visual attention to the difference in that design element." [43] The court expressed a similar view in the "Logic Programming Switch" case of 2012, further expounding that different kinds of design features exert different influences on the overall visual effect of a product: "functional design features usually do not have notable impact on the overall visual effect of a design, while ornamental features generally have an impact on the overall visual effect of a design; as for design features that are both functional and ornamental, the degree of ornamentality should be factored in when assessing their impact on the overall visual effect, wherein the more ornamental the design features are, the larger impact they are likely to have on the overall visual effect, and vice versa". [44]

In the Chennuo case of 2014, the Supreme People's Court made a clear statement in response to the role of design features that are both functional and ornamental, holding that "for products such as pole contactors and circuit breakers, the pole surface of the products, subject to the influence of functionality, is all arranged with raised corrugations, but the specific shape, density, and distribution of corrugations on the pole surface are not solely dictated by the function of the products. Hence, the specific variation in design of the corrugations should be taken into account when assessing whether the designs of these kinds of products are identical or similar. And the accused product is neither identical nor similar to the patented design in suit." [45]

A similar view was expressed by the CAFC in the Ethicon case: "if viewed in isolation, (functional design features) will lose their specific significance, nor will it be possible to evaluate the shape from the perspective of design space. Therefore, whether a design is functional requires viewing the claimed design in its entirety." [46]

A scholar in summing up the above view opined that even if there is a change of the functional feature or functional effect, the assessment on whether designs are similar should be made in the manner of "overall observation and comprehensive judgment" on the basis of whether the variation in design feature brought by the change has a notable impact on the overall visual effect. [47]

3. Integrated consideration of the reasonableness of various criteria

Although the ECJ adopted the "no-aesthetic consideration" approach in the DOCERAM case, deeming that it can better reflect the original intention of design protection,

in this author's opinion, it does not mean the abandonment of the "multiplicity of forms" test. Actually, the integrated application of both criteria in a case may be more advantageous to the accurate identification of functional design features. It is just for this reason that the Supreme People's Court pointed out in the "Logic Programming Switch" case (2012) that "if the design feature has no room for aesthetic consideration, it obviously is a functional design feature. If [it is] …… one of the limited designs for achieving a certain function, this is strong evidence to prove that the design feature is a functional feature. The criterion for determining a functional design feature does not lie in availability of design alternatives, but in whether the consideration for aesthetic appeal is unnecessary." [48] In addition to clarifying the "no-aesthetic consideration" criterion, the court has also affirmed the room for application of the "multiplicity of forms" criterion to some extent. This is a case of guiding significance in the sense that the Supreme People's Court first indicated therein its stand toward the criteria for identifying functional design features and the role of these features.

The judge of this case commented that "the correlation between the availability of design alternatives and functional design features embodies a relationship between phenomenon and essence of functional design features, …… the essence lies in whether a design feature is solely dictated by the particular function with no need for aesthetic consideration ……. whereas the phenomenon may be manifested as a design feature with no design alternatives (exclusivity in design feature selection) or merely with limited alternatives. …… The exclusivity or limited alternatives of design features, because of their correlation with functional design features, can be taken as the evidence for assessment of functional design features." [49] This comment may be regarded as an exact summary of the correlation between the two criteria.

As regards the controversy surrounding whether to use the "exclusivity" or "limited alternatives" approach in the assessment of the "multiplicity of forms", the Supreme People's Court has in fact made a response in the "Shower Head" case: "Functional design features fall under two types: one is the sole design to achieve a particular function, the other is one of the multiple designs to achieve a particular function, wherein the design is solely dictated by the particular function to be achieved and does not concern aesthetic consideration." [50] Similarly, the court in *Apple Inc. v. the Beijing Intellectual Property Office* further explained that "if the design feature of a product is primarily dictated by its function, it is impossible to show its innovation and contribution to the aesthetic appeal of the design, and this is the root cause for not considering the functional design features in the assessment of the overall visual effect of a design. A design feature solely dictated by function is surely a functional design feature given that aesthetic consideration is out of the question; as for a design feature primarily dictated by function, it should also be determined as a functional design feature if the feature is designed for non-aesthetic reasons." [51]

In other words, regardless of the "exclusivity" or "limited alternatives" approach, both have their meaningful role in the assessment of functional design features, but both have to be applied in conjunction with the "no-aesthetic consideration" criterion. It is perhaps based on the same consideration that the Beijing High People's Court did not adhere rigidly to either of the above two approaches when formulating the Guidelines for Patent Infringement Determination, but instead presented the functional design features in a more well-rounded way as "design features limitedly or solely dictated by the function and formed regardless of aesthetic factors" [52]

4. Incorporation of design space into assessment

"Design space", also known as design freedom, refers to the degree of freedom available to a designer in creating a particular product design. In the EU, "design space" is written into the Community Designs Regulation as part of the substantive content of the patentability criteria for "originality", and in judicial practice, is taken as an important factor for evaluating whether a design in suit meets the requirement for patentability and complies with the scope of protection. In China, "design space" was introduced to the legal domain when appearing for the first time in the Interpretation (II) of the Supreme People's Court on Several Issues Concerning the Application of Law in the Trial of Patent Infringement Disputes, as a term considered to be capable of more accurately defining the knowledge level and cognitive capabilities of average consumers. [53]

The extent of design space and the functionality doctrine, both as important concepts of the design protection system, are closely relevant, particularly in the application of the "multiplicity of forms" criterion in practice. In respect of a design feature, the greater the design space, the more alternative designs will be available, thus more consideration can be given to the aesthetic factor, and its functional-

ity will be weaker; conversely, the smaller the design space, the less alternative designs will be available, and the application of the aesthetic factor will be limited, thus the functionality will be stronger. In light of this, the UK court in the design infringement case of *Samsung Electronics (UK) Limited v. Apple Inc.* (2012) concluded that "functions of a product and parts thereof are key constraints of design space. For design features that are both functional and aesthetic, in the infringement determination of the design, we must take into account the design space as well as the existing design corpus for the product incorporating the design or parts thereof." [54]

In fact, China has started analyzing the relationship between design space and functional design features in its judicial practice some years ago. In the "Bridgestone Tire" case of 2010, the Supreme People's Court pointed out that "in the design of a tire, one certainly has to take into account such features as those related to safety performance, steering performance, braking performance, wear and tear, skid resistance, heat dissipation, and noise reduction. But on the premise that the requirements for the above functions are met, there is still a high degree of freedom in the design of the tire including the tread pattern and layout on the main tire surface, which is not solely dictated by practical functionality. Variation in the tire tread pattern and layout can lead to different overall visual effects on different tires." [55] It is not difficult to see from this case that the integrated application of the design space and functional design features is aiming at the ultimate goal of evaluation of the degree of impact of a design feature on the overall visual effect of a product incorporating the design. ■

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[1] Article 11 of the Interpretation of the Supreme People's Court on Several Issues Concerning the Application of Law in the Trial of Patent Infringement Disputes.

[2] Part IV, Chapter Five, Section 6.1 of the Guidelines for Patent Examination.

[3] The Intellectual Property Tribunal of the Supreme People's Court. Understanding and Application of the Intellectual Property Judicial Interpretation of the Supreme People's Court (2016 edition, p. 62). China Legal Publishing House.

[4] Zhang Xiaodu (2013). How to construe "aesthetic appeal" in definition of design in Patent Law. *China Patents & Trademarks, 1*.

[5] Article 13 of Several Guiding Opinions of Beijing High People's Court on the Adjudication of Regarding Design Patent Cases (Interim).

[6] Yang Kai (2014). Analysis of "functional features" in designs. *China Patents & Trademarks, 2*.

[7] Beijing Intellectual Property Court's Administrative Judgment No. Jing73xingchuzi 2648/2016.

[8] *AMP Inc. v. Utilux Pty. Ltd.*, 1971 F.S.R. 572.

[9] It should be noted that this case was the first case in which the ECJ explicitly responded to the exclusion of functional shape in the trademark law, and the Advocate General mentioned in the comments how to define functional designs from the perspective of Community Designs Regulation (CDR). In a strict sense, it is not the first case in which Article 8(1) of the CDR is explained. *Koninklijke Philips Electronics NV v. Remington Consumer Products Ltd.*, Case C-299/99, 2002 E.C.R.

[10] Uma Suthersanen (2010). Design Law: European Union and United States of America (2nd, p.104). Thomas Reuters (Legal) Limited.

[11] Lindner Recyclingtech, Case R 690/2007-3.

[12] Case R 211/2008-3.

[13] Case C395/16.

[14] Yang Fei (2019). Latest development of design functionality exclusion criterion in the EU — Comments based on *DOCERAM GmbH v. CeramTec GmbH. Electronics Intellectual Property, 1*.

[15] Recital 10.

[16] 35 U.S.C. 171.

[17] MPEP 1504.01(c).

[18] Jason DuMont (2009). A non-obvious design: Reexamining the origins of the design patent standard. *Gonzaga Law Review, 45(3)*.

[19] *In re Garbo*, 287 F.2d 192. 1961.

[20] Application of Albert A. Carletti and Welsh C. Whittlesey. Patent Appeal No. 7039.

[21] Gao Yang. Functionality determination of U.S. trade dress and design patents — From the perspective of *Apple Inc. v. Samsung*. Collection of Theses of China Intellectual Property Law Society Annual Meeting 2015.

[22] *Aiva Group International v. L.A. Gear California*, 7USPQ 2d 1548, 1533 (Fed. Cir. 1988).

[23] *L.A. Gear, Inc. v. Thom McAn Shoe Co.*, 988 F.2d 1117 (Fed. Cir. 1993).

[24] *Lee v. Dayton-Hudson Corp.*, 838 F.2d 1186, 1188 (Fed. Cir. 1988).

[25] Jason J. Du Mont, Mark D. Janis (2012). Functionality in Design Protection Systems. 19 J. Intell. Prop. L. 261.

[26] *David A. Richardson v. Stanley Works, Inc.*, 597 F.3d 1288.

[27] *Ethicon Endo-Surgery v. Covidien*, Appeal No.14-1370, Fed, Cir, 2015.

[28] Wang Peng, Xie Donghui and Ma Yuefei (2009). Exclusion of functional designs from design patent protection. *People's Judicature (Case), 16*.

[29] Orit Fischman Afori (2008). Re-conceptualizing Property in Designs, 25 Cardozo Arts & Ent. L.J. 1105.

[30] Directive Recital 14; Regulation Recital 10.

[31] The Supreme People's Court's Administrative Judgment No. Xingtizi 1/2011.

[32] *In re Morton-Norwich Prod's, Inc.*, 671 F.2d 1332 (C.C.P.A. 1982).

[33] See supra note 17.

[34] *Best Lock Corp. v. ILCO Unican Corp.*, 94 F.3d 1563, 1566 (Fed. Cir. 1996).

[35] Orit Fischman Afori (2010). The Role of the Non-Functionality Requirement in Design Law, 20 Fordham Intell. Prop. Media & Ent. L.J. 847.

[36] Ibid.

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[52] Article 85 of the Guidelines for Patent Infringement Determination (2017) issued by the Beijing High People's Court.

[53] See supra note 3, p. 38.

[54] *Samsung Electronics (UK) Limited v. Apple Inc.*, [2012] EWCA Civ1339.

[55] The Supreme People's Court's Civil Judgment No. Mintizi 189/2010.