

# Application of “Logical Analysis, Inference, or Limited Experimentation” in Assessment of Inventive Step

Li Yue and Wei Cong\*

## I. Introduction

Assessment of inventive step is a crucial issue in patent grant and affirmation proceedings. In accordance with the provisions in the Guidelines for Patent Examination of the PRC, “if the person skilled in the art can obtain the invention just by logical analysis, inference, or limited experimentation on the basis of the prior art, the invention is obvious”. “Logical analysis, inference, or limited experimentation” in the assessing process seems to empower an assessor to make assessment at its discretion; however, it tends to arouse concerns in the IP field over whether the assessor applies the criterion with subjective factors.

What is the position of the concept “logical analysis, inference, or limited experimentation” in the assessment of inventive step? What is the link between that concept and the commonly adopted “three-step” method for assessing inventive step? Furthermore, is there any boundary between “logical analysis, inference” and “limited experimentation”, and how can we accurately apply that concept in the assessment of inventive step? All these questions will be expounded in the following.

## II. Position and function of “logical analysis, inference, or limited experimentation”

As well-known in the IP field, both the Patent Law and the Implementing Regulations of the Patent Law require that one shall make examination from the perspective of a per-

son skilled in the art. So does Article 22.3 regarding inventive step in the Patent Law, which stipulates that “whether or not an invention involves an inventive step shall be evaluated on the basis of the knowledge and capability of the person skilled in the art”.<sup>1</sup> Thus, it requires every assessor to make great efforts to assess an inventive step of an invention from the perspective of a person skilled in the art when facing every patent or patent application. Even though such required assessor has been jokingly regarded as a mirage in theory, it shall be apprehended, however, such requirement means that the process for assessing an inventive step shall show the cognitive capability and discretion possessed by the qualified assessor. Apparently, it is far from enough to pay attention only to whether the assessor has requisite common technical knowledge. We should place more emphasis on whether it can apply the knowledge dynamically. As the above-mentioned provision indicates, “a person skilled in the art” as an assessor in the assessment of inventive step shall possess the capability to make “logical analysis, inference, or limited experimentation”. The capability shall be based on the common technical knowledge grasped by a person skilled in the art and fall within the scope of capability possessed by such a virtual subject.

We should always adhere to the principle of assessing an inventive step by the “three-step” method from the perspective of a person skilled in the art, when “determining the closest prior art” in the first step and “determining the distinguishing features of the invention and the technical problem actually solved by the invention” in the second step. Further, “logical analysis, inference, or limited experimentation” is regarded as the specific manner used by the

assessor in the third step of “determining whether or not the claimed invention is obvious to a person skilled in the art”, and as can be known from the provisions of the Guidelines for Patent Examination, the results obtained by application of the above concept are directed to the conclusions on obviousness, and can directly reflect whether a person skilled in the art stands in the right position when assessing obviousness, which explains why special attention should be paid to “logical analysis, inference, or limited experimentation”.

It shall be noted that “logical analysis, inference, or limited experimentation” tends to arouse people’s concerns over influence of subjective factors on assessment of inventive step. The reason lies in that in real world, it is surely difficult for assessors with different backgrounds to meet the consistency requirement when handling cases just based on standardized subdivision and academic research and discussions. It is a hard nut to crack in practice to assess an inventive step from the perspective of a person skilled in the art, which is an idealized virtual person.

In face of such a problem, the first thing to do is accurately determine the position and function of the above concept in the assessment of obviousness. As stated above, just because of the requirement on assessment from the perspective of a person skilled in the art, “logical analysis, inference, or limited experimentation” can make sense under the patent law and unavoidably appear in the process for assessing obviousness, and the origin thereof can be traced back to the original tenet of the provision on inventive step.

A legal norm is a tool that reflects the value orientation of a law maker, so we shall apply the provisions of the Patent Law, bearing in mind the value orientation. The provision on inventive step is undoubtedly the most enchanting and informative provision in the patent law since its connotation is far from plain as it looks like. In the application of that provision each time, consideration shall be given to two aspects for rationally maintaining their balance. On the one hand, the provision on inventive step is set forth to encourage people to challenge the most valuable creative missions for the sake of exclusive rights, and to ensure that the “oil of interests” is selectively fuelled to the valuable “fire of creativity”; and on the other hand, the provision provides a space of freedom for “common” innovations and accomplishments achieved by R&D personnel in each field under the regulation of the common market, so that the person

skilled in the art is capable of making conventional improvements and modifications by means of and on the basis of the prior art.<sup>2</sup> Therefore, the key to assessment of inventive step lies in that the boundary between the two aspects as mentioned above shall be clarified with the focus on the legislative intent of the provision on inventive step, and therefore the judgment shall be made on conventional improvements and modifications by means of and on the basis of the prior art. That is to say, the facts disclosed in relevant prior arts shall be determined, and meanwhile, account shall be taken of what are conventional improvements and modifications made on the basis of the prior art by a person skilled in the art. These are the values of introduction of “logical analysis, inference, or limited experimentation”.

Similar provisions can be found in laws of countries in Europe, U.S.A and Japan notwithstanding the difference in literal forms. For instance, the Guidelines for Examination in the European Patent Office enumerate several examples under the subsection entitled “obvious and consequently non-inventive selection among a number of known possibilities”: (i) the invention consists merely in choosing from a number of equally likely alternatives; (ii) the invention resides in the choice of particular dimensions, temperature ranges or other parameters from a limited range of possibilities, and it is clear that these parameters could be arrived at by routine trial and error or by the application of normal design procedures; (iii) the invention can be arrived at merely by a simple extrapolation in a straightforward way from the known art; and (iv) the invention consists merely in selecting particular chemical compounds or compositions from a broad field<sup>3</sup>.

According to the Examination Guidelines for Patent and Utility Model in Japan, among exercises of ordinary creativity of a person skilled in the art are a selection of an optimal material from publicly known materials which achieve a specific object, an optimization of a numerical value range, a replacement with equivalents, and a workshop modification of design in applying specific technology; as for an invention defined by a numerical value range, optimization of a numerical value range or selection of an optimal numerical value range through experimentation is ordinary creativity of a person skilled in the art and shall usually not be regarded as inventive; however, if within the numerical value range defined in the claimed invention, advantageous effects not disclosed in references, effects that are essentially different from those disclosed in references or effects that

are extremely superior though the same as those disclosed in references shall be deemed as inventive because they cannot be predicted by a person skilled in the art with then technical skills<sup>4</sup>.

The Manual of Patent Examining Procedure (MPEP) published by the USPTO sets forth, in several parts, the circumstances where the claimed invention differs from the prior art reference in concentration, temperature, shape, structure, selection of materials and the like, and clarifies that an invention is usually obvious if the difference fails to bring about technical effects that are new in terms of type or extent, or unexpected effects<sup>5</sup>.

### III. Link and boundary between “logical analysis, inference” and “limited experimentation”

In the assessment of obviousness, introduction of concepts “logical analysis, inference” and “limited experimentation” is conducive to improving the objectivity and accuracy of use of knowledge and capability of a person skilled in the art in the assessment of inventive step based on clearly-stated concepts and studies on correct application of these concepts. It also solves the issue of “abuse” of common knowledge that is of great concern to the public at present, and provides support for reasonable application of common knowledge in the step of determination of whether a teaching exists from two dimensions, namely, “logical analysis, inference” and “limited experimentation”.

First of all, “logical analysis, inference” and “limited experimentation” jointly reflect the capability of a person skilled in the art but with emphasis on different aspects.

As far as the assessment of inventive step is concerned, “logical analysis, inference” refers to the process in which a person skilled in the art discovers an internal logical relation between things through thinking activities following the laws of logic in conjunction with its common technical knowledge and draws a conclusion that is in line with the logical relation. Such a process shows an ability to discover and analyse an issue and then solve it by using the knowledge under the guidance of laws of logic; and “logical” is a requirement on a rigorous and normative thinking activity characterized by its rational characteristics, which is to guarantee the accuracy of results.

Judgment from the perspective of a person skilled in

the art means that an assessor shall try every means to exert its advantage in technical thinking in order to ensure that the assessment of inventive step is done by an “insider” in the field of an invention. Thus, analysis and inference herein place emphasis on the process of technical thinking, and the technical thinking is characterized by respect for rationality and rigor and pursuit for scientific conclusions. Technicians are accustomed to linear, causal and rigorous reasoning and proof. Thus, different from deductive reasoning mainly used in the general application of laws, logical thinking herein covers many logical reasoning methods, including, among other things, syllogism which deduces a conclusion from the general case to particular cases, induction which infers from particular cases to the general case, and analogism which arrives at a particular case from another particular case. And logical thinking herein involves means such as deductive reasoning, inductive classification, computational derivation, graph analysis and inverse thinking, and focuses on the difficulty in mental activities based on common technical knowledge for the sake of problem solution.

“Limited experimentation” refers to a process in which a person skilled in the art is engaged on trials, selection and verification through conventional experiments, and reflects the capability of the person skilled in the art to arrive at a potential technical solution for a technical problem to be solved through trials, selection or verification by conventional experimental means. Correspondingly, the word “limited” in the expression “limited experimentation” does not mean there is a limitation to the number of experiments, and more emphasis should be placed on the experimental method *per se* and whether the experimental difficulty and workload in the pertinent field are common. That concept pays more attention to the labour (workload) done by a person skilled in the art for an invention.

For example, a patent differs from the prior art in the selection of a specific material for manufacturing a buoyancy member, and the application document thereof teaches the shape and volume of the member, as well as the liquid in suspension. Under such circumstances, efforts shall be made to calculate the material density or the material density range of the buoyant member according to the given information by the buoyancy formula, thereby determining a relevant material. Such a process belongs to logical analysis and inference. With the knowledge of conventional materials used in the field, if the most appropriate material can

be determined among several conventional materials by way of experimentation, such a process belongs to limited experimentation.

As can be seen, “logical analysis, inference” and “limited experimentation” are applicable on dissimilar occasions and in different orders. Logical analysis and inference work everywhere. In face of a technical problem, a person skilled in the art tends to first analyse and infer the existing clues through thinking activities in conjunction with its grasped common technical knowledge (such as a principle, a law or a formula) and pre-judge whether it is possible to solve the problem and how to solve it, as well as the necessity and likelihood of experimentation through analysis. Common circumstances under which logical analysis and inference are applicable include, for example, simple shape variation of a known member, determination of objects that meet the defined requirements, simple replacement between functional analogs, shape and dimension design of a product and the like. When it is impossible to determine that the technical problem can be solved simply through logical analysis and inference, a person skilled in the art will further take into account whether to try, select or verify by means of experimentation, and determine whether experimentation conducted for the claimed technical solution derived from the prior art satisfies “limited” requirement. Common circumstances for limited experimentation include, for example, determination of reaction temperature, selection of preferable reaction conditions within a limited range, selection of specific carriers among conventional carriers, selection of an optimal ratio among multiple optional components of a composition and the like. However, even though experimentation is in need, the manner of experimentation shall be analysed and determined in advance and the experimental results shall be analysed, induced and summarized thereafter.

It is noteworthy that “logical analysis, inference” and “limited experimentation”, which serve as the constituents of capability of a person skilled in the art, are closely linked in actual application. Firstly, both of them shall be conducted on the basis of the prior art, and driven under the technical information taught by the prior art; secondly, both of them depend on the capability of a person skilled in the art and shall be conducted within an expectable scope of conventional R&D work done by a person skilled in the art, and any technical solution that is obtained beyond convention R&D work and achieves an unexpected effect does not fall

into the scope of “logical analysis, inference” and “limited experimentation” and therefore should not be questioned for its inventive step by incorporating “logical analysis, inference” and “limited experimentation”; thirdly, both of them complement and merge into each other in actual application, and under most circumstances, it is required to preliminarily determine the scope of the candidate technical solutions by logical analysis and interference and then make a selection among them for verification with the help of limited experimentation. So special attention shall be paid to the capability of a person skilled in the art to apply those two concepts. Under some customary circumstances in practice, the inventions can be done either by logical analysis and inference, or by limited experimentation, which is quite common even in the examples in the previous text.

Despite of the limited space, we still have to go back to a heatedly discussed issue concerning common knowledge. Common knowledge in the pertinent field plays a significant role in the assessment of whether a teaching exists by logical analysis and inference. It is always an advocated practice that textbooks, technical dictionaries, technical manuals, etc. are used to ensure the accurate determination of common knowledge in the assessment of inventive step.

Nevertheless, in the writers’ view, it is not hard to solve the issues of arbitrariness and subjectivity that may occur in determination of common knowledge. Though evidence production and reasoning are crucial in accurate determination of common knowledge, they are, after all, still at the fact-finding level. Fact-finding shall serve application of law, and determination of common knowledge can, in no way, take the place of judgment on teachings. Further, the next issue about common knowledge, i.e., how to use common knowledge as a focal point for assessment of inventive step, is much brain straining. In addition, people may easily come to different conclusions when assessing inventive step. Thus, account shall be taken of the role of common knowledge in the judgment on “logical analysis, inference” and “limited experimentation”; and more importantly, whether there exists any teaching for inventive step is judged on the basis of contributions as a whole made by an invention, so we had better deal with the relationship between common knowledge that appears in some parts of the invention and the holistic inventive concept; and meanwhile, it shall also be borne in mind that no matter how objective and accurate the assessment is, the relevant con-

tents in the examination decision must be conducive to rendering the assessment of inventive step convincing, and shall be not only rational and well-founded, but also presented in an orderly and concise manner.

#### IV. Typical application of “logical analysis, inference, or limited experimentation”

As a principle, “logical analysis, inference, or limited experimentation” reminds an assessor of considering the capability of a person skilled in the art to make analysis and inference and implement routine experimental means with its common technical knowledge and on the basis of the prior art in the assessment of technical teachings. It shall be noted, however, that the capability to make analysis, inference and experimentation must be commensurate with the skills possessed by the person skilled in the art.

In the case involved in the Invalidity Decision No. 82605, claim 1 is directed to a fluorine-containing sulfuric acid separation concentration method at a standard pressure. One of the differences between claim 1 and Evidence 1 is that the technical solution of claim 1 requires more than ten hours for heating, whereas that of Evidence 1 requires a much shorter heating time. Regarding the heating time, an assessor as a person skilled in the art should know that a higher degree of vacuum guarantees a higher efficiency of separation concentration, which can therefore shorten the heating time; and when the degree of vacuum is reduced to be approximate to a standard pressure, the efficiency of separation concentration usually decreases and the processing time required for achieving the same degree of volatility shall usually be prolonged. In view that Evidence 1 is done at a higher vacuum level, a person skilled in the art can, by logical analysis and inference, draw such a conclusion that the heating time must be extended if the volatilization of hydrogen fluoride and water meets the requirement under the standard pressure used in the present patent. Meanwhile, it can be judged that under those circumstances, determining how long it takes for heating is a conventional job for a technician and can be obtained through “limited experimentation”.

On the premise that the distinguishing feature as a technical means has been disclosed in the prior art, if a person skilled in the art can reasonably predict by logical anal-

ysis and inference that applying the technical means to the closest prior art can successfully solve the technical problem, it can stimulate the motivation to improve the closest prior art. As a result, logical analysis and inference shall apply on certain premise.

In the case involved in the Re-examination Decision No. 43751, claim 1 is directed to a method for inhibiting mycotoxin production sprayed onto food crops, wherein an admixture containing a thiophanate-methyl agent and a sterol biosynthesis inhibitor is sprayed onto food crops. Reference 1 discloses a method for reducing mycotoxin content by spraying benomyl and tebuconazole (one of sterol biosynthesis inhibitors) onto wheat. Claim 1 differs from Reference 1 in that one of the effective ingredients defined in claim 1 is a thiophanate-methyl agent, whereas the corresponding effective ingredient disclosed in Reference 1 is benomyl; and it is also determined in the Re-examination Decision that claim 1 is an alternative to Reference 1 because they solve the same technical problem.

Reference 2 happens to disclose the effect of thiophanate methyl on the mycotoxin contamination in wheat, indicating that thiophanate methyl can reduce the mycotoxin content. The relationship between thiophanate methyl and benomyl has been recited in textbooks, such as Pesticide Introduction. It is well-known in the art that benomyl and thiophanate methyl, though being structurally different from each other, belong to benzimidazole-type fungicide, tend to be converted into carbendazim within plants, and eventually kill bacteria in the form of carbendazim. Furthermore, under the teaching of Reference 2 that thiophanate methyl is used to prevent scab of wheat and barley and reduce the content of mycotoxin, such as DON, since a person skilled in the art is quite clear that the above two types of benzimidazole-type fungicide are metabolized in the same way in plants and the metabolites that actually work in plants are also the same, it may arrive at the conclusion, by logical analysis and inference, that the technical solution of the patent in suit can be obtained by substituting thiophanate methyl for benomyl and then combining thiophanate methyl with a sterol biosynthesis inhibitor, that is, a person skilled in the art has the motivation to apply thiophanate methyl to Reference 1 to replace benomyl, and the technical solution of claim 1 is obvious.

When determining whether there is “reasonable expectation of success”, it is required to take into consideration whether the prior art discloses the technical means serving

as the distinguishing feature, and to pay special attention to whether the function, effect and role of the technical means, if disclosed, in the technical solution of the prior art are identical with or similar to the claimed invention.

For instance, the claimed invention and the closest prior art are substantially the same in terms of the overall structure, with the only difference lying in one member, which is defined at a generic level in the closest prior art but more specific in the claimed invention. Although the closest prior art did not describe the function of the member in detail, a person skilled in the art with common technical knowledge can realize that the function that the member exerts objectively is the same as the effect pursued by the claimed invention. With such a clear objective in mind, a person skilled in the art is able to further narrow the generic member down to a specific structure by logical analysis, inference or limited experimentation.

In the case involved in the Invalidation Decision No. 28609, the patent in suit seeks to protect an air spring usually disposed between a train body and a steering rack. The height of the air spring can be adjusted only by adjusting the height of a third support member 31 of the spring. In order to solve the technical problem of preventing the entire weight from increasing during the adjustment, the patent in suit is provided with the third support member having a vertical cross section that gradually widens from an upper end to a lower support surface end, and having a conical outer peripheral surface. Evidence 1 also discloses an air spring. The holistic structure of the air spring of Evidence 1 is substantially identical with that of the patent in suit, and an installation seat 5 of Evidence 1, corresponding to the third support member 31 of the technical solution of the patent in suit, also has a vertical cross section that widens from top to bottom. The patent in suit only differs from Evidence 1 in that the patent in suit defines the outer peripheral surface of the installation seat as conical.

Although Evidence 1 fails to explain why the installation seat is designed in such a shape, a person skilled in the art with common knowledge can realize that such a design can, on the one hand, stabilize the steering rack, and, on the other hand, increase the weight as little as possible when adjusting the height of the air spring. In addition, a conical shape is the most common structure widening from top to bottom. In view that Evidence 1 has disclosed that the installation seat is holistically in a shape that gradually widens from top to bottom. To specifically modify the installation seat into a conical shape that gradually widens from top to bottom is a simple structural deformation that can be done in the capacity of a person skilled in the art. Neither

deciding to use the conical shape by analysing similar structures nor conducting trials on a limited number of commonly used similar structures shall extend beyond the scope of conventional modifications made by a person skilled in the art. As a result, it can be deemed that a person skilled in the art has motivation to make such an improvement to the prior art.

Where the distinguishing feature of the claimed invention over the prior art relates to determination, selection or adjustment of some detailed contents or auxiliary means, even though the prior art does not recite those specific contents, considerations shall be given to whether such a distinguishing feature can be incorporated by a person skilled in the art after limited experimentation. The extent of “limited” plays a vital role in judging application of “limited experimentation”.

In the case involved in the Re-examination Decision No. 54033, claim 1 definitely defines that a mixed acid solution does not contain acetic acid. The Re-examination Decision decided that Reference 1 clearly teaches that addition of acetic acid can effectively “control the oxidation rate” to avoid silicon surface colour change, and acetic acid may form complex ions with metal ions, which may reduce cleaning efficiency. In other words, Reference 1 provides both positive and negative teachings. Since there is no technical obstacle to removal of acetic acid in the prior art, and Reference 1 also recites the defect of the addition of acetic acid, a person skilled in the art, in face of two solutions in the prior art (one having acetic acid, the other not), has the expectation and capability to try the technical solution containing no acetic acid by experimentation. In such a case, it shall be deemed that the trials required for finally determining the technical solution containing no acetic acid belong to “limited experimentation”.

A typical circumstance for assessing inventive step by “limited experimentation” is that when only conducting trials among several optional solutions taught by the prior art with the experimental means known in the art are needed, and the experimental results can also be verified by the experimental means known in the art, it means a person skilled in the art can arrive at the claimed invention based on the prior art by limited experimentation.

In the case involved in the Re-examination Decision No. 1402, the application in suit is directed to an azeotrope of 1, 1-dichloro-1-fluoroethane and methanol, and specifies the boiling point of the azeotrope. Reference 1 teaches an azeotrope of 1, 2-dichloro-1-fluoroethane and methanol, and specifically the weight percent of compositions and boiling point of azeotrope. There are three isomers of dichlo-



ro-fluoroethane in the prior art. Since Reference 1 discloses the azeotropic composition formed of one of the three isomers and methanol and/or ethanol, it is very natural for a person skilled in the art to think over whether the other two isomers (e.g., 1, 1-dichloro-1-fluoroethane) can be combined with methanol to form an azeotropic composition. Moreover, one will be quite easy to know whether 1, 1-dichloro-1-fluoroethane and methanol can be combined to form an azeotropic composition by plotting a diagram showing the boiling point data of the compositions at atmospheric pressure using experimental means that has been known prior to the filing date of the claimed invention. Plotting a diagram showing the boiling point data of the compositions at atmospheric pressure is a customary technical means used in the art, the required data can be obtained by the known experimental means, and a person skilled in the art is also capable of verifying whether the isomer and methanol actually form an azeotropic composition by customary experimental means. For all the above reasons, claim 1 is a technical solution that can be arrived at on the basis of the prior art by limited experimentation.

Similar to judgment on “logical analysis, inference”, teachings from the prior art and reasonable expectation of success in solving a technical problem are also important when using “limited experimentation” to assess inventive step. When considering the capability of a person skilled in the art to achieve the result by carrying out limited experiments for judging whether there exists a teaching, the more teachings from the prior art on how to perform the experiments for achieving the purpose, the clearer about the method and direction of the experiments, and for the person skilled in the art the easier to predict the experimental results accurately, then the experiment has more chance to be considered as being carried out in “limited number”.

In the case involved in the Re-examination Decision No. 60662, claim 1 is directed to a dehumidifying element. One of the differences between claim 1 and Reference 1 is that hygroscopic base concentration of the salt solution in claim 1 is between 10 to 15 wt%, whereas that in Reference 1 is 5 wt%. The application in suit uses a better absorbing polymer to absorb sufficient salt ions, in order to solve the technical problem of enhancing a dehumidifying effect. A person skilled in the art is certainly clear about the relationship between the salt concentration and the absorption. If the concentration of salt is too low, the absorption of salt ions will be insufficient. Thus, a person skilled in the art tends to conceive of increasing the salt concentration in view of 5 wt% of salt concentration disclosed in Reference 1, to facilitate the absorption of salt ions and further enhance the dehumidifying effect. On this basis and by limited experimentation, we can obtain the hygroscopic base concentration ranging from 10 to 15 wt% that ensures an enhanced dehumidifying effect. In other words, since the prior art discloses 5 wt% of salt concentration and a person

skilled in the art knows that a better dehumidifying effect can be obtained in the event of a higher salt concentration, experiments carried out for determining the specific scope of the hygroscopic base concentration belong to “limited experimentation”.

## V. Conclusion

If an invention is compared as a hall of a building, where there is a distance between the foundation of the prior art and the technical solution of an invention, the Guidelines for Patent Examination enable a person skilled in the art to enter into the hall with the ladder composed of “logical analysis, inference or limited experimentation”. Such a ladder, however, is not built for helping an assessor to question an inventive step of an invention, but in a hope of endowing an assessor with stronger responsibilities and obligations to participate in the assessing process in the capacity of a person skilled in the art, which sets up a higher requirement for accurate application of criterion for assessing inventive step. Hence, the height of the ladder shall be in line with the capability of a person skilled in the art and precisely reflect the skills of a person skilled in the art for making conventional modifications and improvement by the filing date, or otherwise, it stands in violation of the original intent of the Guidelines for Patent Examination. After all, all inventions are created on the basis of existent technologies and experience by analysis, inference and experimentation. In this sense, understanding and application of the two words “logical” and “limited” will be of great significance.

This article is in an attempt to analyse the position and function of “logical analysis, inference or limited experimentation”, and its relationship with the “three-step” method for assessing inventive step, and expound its typical application in the assessment of inventive step with case studies. It is to be hoped to benefit the IP industry to have an in-depth understanding of the capability of a person skilled in the art when assessing inventive step, and further improve the quality of assessment of inventive step by “logical analysis, inference or limited experimentation”. ■

The author affiliation: PRB of the SIPO

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\* All authors contribute equally to this article.

<sup>1</sup> Part II, Chapter 4, Section 2.4 of the Guidelines for Patent Examination.

<sup>2</sup> Li Yue et al. (2017). Study on criteria for problem-oriented assessment of inventive step. *China Patents & Trademarks*, 2 and 3.

<sup>3</sup> Annex in Part G, Chapter VII of the Guidelines for Examination in the European Patent Office.

<sup>4</sup> Part II, Chapter Two, Section 2.5 of the Examination Guidelines for Patent and Utility Model in Japan.

<sup>5</sup> Sections 2144.04 and 2144.05 of MPEP.