COMPARING JAPANESE AND U.S. STANDARDS OF OBVIOUSNESS: PROVIDING MEANINGFUL GUIDANCE AFTER *KSR*

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I. INTRODUCTION

On April 30, 2007, the United States Supreme Court decided *KSR International Co. v. Teleflex Inc.*[1] This decision was the Court's first decision on the obviousness standard since the establishment of the Court of Appeals of the Federal Circuit and the seventh decision on the obviousness standard since the establishment of modern patent law in 1952.[2] *KSR* reaffirms the Supreme Court's commitment to an obviousness doctrine grounded in basic principles rather than a single mechanical formulation.[3]

One of the most important Supreme Court cases establishing the basic approach to the obviousness analysis is *Graham v. John Deere Co*.[4] *Graham* describes the obviousness standard based on Supreme Court precedent and the Patent Act of 1952.[5] *Graham* notes that § 103 "was intended merely as a codification of judicial precedents . . . with congressional directions that inquiries into

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1 127 S. Ct. 1727 (2007).

2 Sakraida v. Ag Pro, Inc. 425 U.S. 273 (1976); Dann v. Johnston, 425 U.S. 219 (1976); Anderson's-Black Rock v. Pavement Salvage Co., 396 U.S. 57 (1969); United States v. Adams, 383 U.S. 39 (1966); Graham v. John Deere, 383 U.S. 1 (consolidated with Calmar, Inc. v. Cook Chem. Co.); *see also* John O. Tresansky, *PHOSITA - The Ubiquitous and Enigmatic Person in Patent Law*, 73 J. PAT. & TRADEMARK OFF. SOC'Y 37, 39 & n.13 (1991).

3 *See generally KSR*, 127 S. Ct. at 1739–43 (rejecting the Federal Circuit's rigid application of the teaching, suggestion, or motivation test to determine obviousness).

4 383 U.S. 1 (1966).

5 *Id.* at 10–17 (discussing the development of the obviousness statute of the Patent Act of 1952, 82 Pub. L. No. 593, 66 Stat. 792 (codified at 35 U.S.C. §§ 1–293).

the obviousness of the subject matter sought to be patented are a prerequisite to patentability."[6] The Court set forth the general approach as follows:

> [T]he § 103 condition . . . lends itself to several basic factual inquiries. Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined.[7]

However, "[t]hese decisions of the Supreme Court are viewed as furnishing little meaningful guidance" for concrete application in any particular case.[8] Commentators regard decisions of the Court of Customs and Patent Appeals and the Federal Circuit as providing more specific instructions to the Supreme Court's guidelines.[9] In order to determine obviousness while avoiding hindsight bias, the Court of Customs and Patent Appeals and the Federal Circuit adopted a "teaching, suggestion, or motivation" test.[10] The teaching, suggestion, or motivation test requires an explicit or implicit suggestion to combine prior art references.[11] The test became a stable standard, but made proving obviousness difficult during United States Patent and Trademark Office ("USPTO") examination and litigation.[12]

Consequently, *KSR* has refocused the nonobviousness inquiry on broad principles, noting that "[t]hroughout [the Supreme] Court's engagement with the question of obviousness, [its] cases have set forth an expansive and flexible approach inconsistent with the way the [Federal Circuit] applied its [teaching, suggestion, or motivation] test here."[13] The Court proceeded to discuss the principles underlying its preceding cases:

> When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it . . . . If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. . . . [I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same

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6 *Id.* at 17.

7 *Id.*

8 Tresansky, *supra* note 2, at 40.

9 *Id.*

10 KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727, 1741 (2007).

11 *Id.*

12 *See id.* at 1741–42 (discussing the Federal Circuit's erroneous formulation of the obviousness analysis framework).

13 *Id.* at 1739.

> way, using the technique is obvious unless its actual application is beyond his or her skill.[14]

But the meanings of the terms "field of endeavor" and "person ordinary skill in the art" are too general for application to specific cases. A more precise interpretation is needed to furnish meaningful guidance.

While Japanese patent law is generally based on German patent law,[15] the Japanese obviousness standard has its roots in the U.S. patent system.[16] Specifically, Japanese patent law copied U.S. patent law's obviousness requirement in a 1959 amendment because the U.S. was the only jurisdiction that included obviousness as one of the requirements for patentability in its examination procedure.[17]

Determinations of obviousness within the Japanese Patent Office ("JPO") are governed by the Examination Guidelines for the Patent and Utility Model in Japan ("Japanese Guidelines").[18] The Japanese Guidelines consolidate the analysis concerning the application of particular laws in order to realize the appropriate, fair, and efficient examination of applications according to set standards and references to statutes, court decisions, and JPO rulemaking.[19] They are widely used as the standard for examiners.[20] The Japanese Guidelines include several obviousness heuristics such as "close relation of technical fields," "close similarity of a problem to be solved," and "close similarity of function, work or operation."[21] They provide many different overlapping rationales for demonstrating obviousness.[22]

The Japanese Guidelines also have provisions to guard against hindsight, which are, as discussed in the following sections, very similar to the guarding provisions of the U.S. patent system. For example, the Japanese

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14 *Id.* at 1740.

15 Robert E. Thomas & Larry A. DiMatteo, *Harmonizing the International Law of Business Method and Software Patents: Following Europe's Lead*, 16 TEX. INTELL. PROP. L.J. 1, 30 (2007).

16 Tokkyo-cho, *Kougyoushoyuukennseidokaikakushinngikaitoushinnsetumeisyo*, 1–3 (Hatsumeikyoukai, 1957).

17 *Id.* The English law had a similar obviousness rule at that time, but the rule was limited to post-grant opposition.

18 *See* JAPAN PATENT OFFICE, EXAMINATION GUIDELINES FOR PATENT AND UTILITY MODEL IN JAPAN (2000), *available at* http://www.jpo.go.jp/tetuzuki_e/t_tokkyo_e/1312-002_e.htm [hereinafter JAPANESE EXAMINATION GUIDELINES].

19 *See generally id.*

20 *Id.* at preface.

21 *Id.* at pt. 2, ch. 2, § 2.5(2).

22 *See id.* at pt. 2, ch. 2, § 2.5 (providing sample rationale for obviousness rejections).

Guidelines specify a "preponderance of the evidence" standard for analyzing obviousness evidence[23] and the Japanese Guidelines have substantive tests to identify advantageous effects from combining prior art, obstructions to combining prior art, and secondary considerations similar to those in the U.S. patent system.[24]

As with U.S. patent law, the Japanese Guidelines have their problems. For example, some practitioners argue that the JPO's reasoning with respect to combining prior art references is too simplistic, especially when dealing with similar technological fields.[25] However, the Japanese and U.S. patent systems can learn much from each other. Their common origin, similar goals, unarguable success, and fifty years of parallel development provide ample opportunity for comparison and mutual growth.

This article focuses on how U.S. courts, practitioners, and scholars can look to the Japanese Guidelines for tested, established methods of determining obviousness while remaining faithful to the expansive and flexible approach set forth by the U.S. Supreme Court. Part II compares the Japanese Guidelines, specifically juxtaposing the obviousness factors and the general factors found in U.S. Supreme Court jurisprudence. Part III focuses on the scope of the obviousness analysis, comparing the "analogous art" and the "nature of the problem" inquiries to Japanese methods. Part IV provides an overview of both U.S. and Japanese methods of reducing hindsight bias, which take on renewed importance in the wake of the *KSR*'s expansion of the obviousness analysis.

II. JUDICIAL OBVIOUSNESS DOCTRINES IN THE U.S. THAT EXEMPLIFY JAPANESE GUIDELINES

The statutory grounding for the Japanese nonobviousness requirement lies in Japan Patent Law Section 29(2), which was modeled after current U.S. patent law.[26]

> Where an invention could easily have been made, prior to the filing of the patent application, by a person with ordinary skill in the art to which the invention pertains, on the basis of an invention or inventions referred to in any of

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23 *See id.* at pt. 2, ch. 2, § 2.4 (providing sample evidences for obviousness rejections by citing § 1.5.3); *id.* at pt. 2, ch. 2, § 2.8 (describing the necessity to show evidence of well-known or commonly used arts).

24 *See generally id.* at pt. 2, ch. 2 (describing the standards and analysis for obviousness).

25 Katsumi Shinohara, *Chizai-Kousai kara mita tokkyo shinnsa/shinnpann*, TOKUGIKON, No. 239 (Nov. 14, 2005).

26 Tokkyo-cho, supra note 16, at 3 (at that time, the U.S. patent law was the only country that had a general obviousness theory).

> the paragraphs of Subsection (1), a patent shall not be granted for such an invention notwithstanding Subsection (1).[27]

The statutory basis for the Japanese obviousness requirement is quite similar to the U.S. patent statute. In particular, the phrase "a person with ordinary skill in the art to which the invention pertains," is similar to the language in § 103.

U.S. courts have had difficulty applying the broad terms of § 103.[28] Lower U.S. courts, such as the Federal Circuit, have attempted to create administrable tests for determining nonobviousness in a consistent and accurate way.[29] However, these tests have often been in tension with the broad principles of nonobviousness articulated by the U.S. Supreme Court.[30] The recent *KSR* decision is the latest signal of the Supreme Court's displeasure with an overly formalist nonobviousness test.[31]

As with § 103, Japanese Patent Law Section 29(2) is phrased in broad terms that are difficult to apply. Japan has dealt with the tension between broad principles and administrable tests by including within the Japanese Guidelines specific methods and factors for determining nonobviousness in particular cases. The JPO continually revises the Japanese Guidelines based on amendments to patent law, court decisions, development of new technologies, and the international developments in order to guide interpretation of the standards of the Japanese patent system.[32]

Part II will demonstrate how these rules correspond with the holdings of U.S. Supreme Court and Federal Circuit cases. Parallels to the obviousness reasoning in the Japanese Guidelines can be found in U.S. Supreme Court, Court of Customs and Patent Appeals, and Federal Circuit decisions.[33] The spe-

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27 JAPANESE EXAMINATION GUIDELINES, *supra* note 18, pt. 2, ch. 2, § 2. Subsection 2.2(1) defines "invention or inventions" in Japan Patent Law Section 29(2) as: "any of the inventions which were publicly known or publicly worked in Japan or elsewhere and inventions which were described in a distributed publication or made available to the public through electric telecommunication lines in Japan or elsewhere prior to the filing of the patent application." *Id.* at pt. 2, ch. 2, § 2.2 note 1.

28 *See* 35 U.S.C. § 103(a) (2006) ("a person having ordinary skill in the art to which said subject matter pertains.").

29 *See*, *e.g.*, KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727, 1741–43 (2007) (discussing the development of the teaching, suggestion, or motivation test).

30 *Id.*

31 *Id.*

32 *See* JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at preface.

33 *See, e.g.*, *KSR*, 127 S. Ct. at 1744–45 (reasoning coincides with Japanese obviousness reasoning on selection of an optimal material, optimization of a numerical value range and close relation of technical fields); Sakraida v. Ag Pro, Inc., 425 U.S. 273, 282 (1976) (reasoning co-

cific Japanese factors can therefore serve as alternative obviousness reasoning in the U.S. Interestingly, there are already U.S. cases whose decisions parallel the Japanese Guidelines for obviousness reasoning based on the "ordinary creativity" of a person of ordinary skill in the art.[34] The similarities between the obviousness rationales in the Japanese Guidelines and the obviousness rationales in the U.S. courts are reflected in *KSR*.[35] For these reasons, U.S. patent practitioners and scholars may benefit from such a comparison as they search for administrable nonobviousness tests to suggest to the Federal Circuit while conforming to the U.S. Supreme Court's jurisprudence on nonobviousness.

There are two more interesting points. First, regarding the similarity of technical fields, U.S. courts have used several factors to determine whether the prior art references may be combined to make an obviousness finding.[36] In other words, these U.S. courts have explained how to place limitations on the scope of

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incides with Japanese obviousness reasoning on mere combination of features); Dann v. Johnston, 425 U.S. 219, 230 (1976) (reasoning coincides with Japanese obviousness reasoning on close relation of technical fields and close similarity of function work or operation); Anderson's-Black Rock, Inc. v. Pavement Salvage Co., 396 U.S 57, 62–63 (1969) (reasoning coincides with Japanese obviousness reasoning on mere combination of features); United States v. Adams, 383 U.S. 39, 50–51 (1966) (reasoning coincides with Japanese obviousness reasoning on mere combination of features, advantageous effects and obstruction (i.e. teaching away)); Calmer, Inc. v. Cook Chem. Co., 383 U.S. 1, 35–36 (1966) (reasoning coincides with Japanese obviousness reasoning on close relation of technical fields, same problem as a claimed invention and close similarity of function, work or operation); Graham v. John Deere Co., 383 U.S. 1, 25–26 (1966) (reasoning coincides with Japanese obviousness reasoning on workshop modification of design and common technical problem); Concrete Appliances Co. v. Gomery, 269 U.S. 177, 184–85 (1925) (reasoning coincides with Japanese obviousness reasoning on close relation of technical fields and common technical problem); Hotchkiss v. Greenwood, 52 U.S. 248, 266 (1850) (reasoning coincides with Japanese obviousness reasoning on mere combination of features); *In re* Beattie, 974 F.2d 1309, 1312–13 (Fed. Cir. 1992) (reasoning coincides with Japanese obviousness reasoning on using solutions known to one of skill in the art to arrive at the claimed invention); *In re* Antonie, 559 F.2d 618, 620 (C.C.P.A. 1977) (reasoning coincides with Japanese obviousness reasoning on selection of an optimal material, optimization of a numerical value range).

34 For example, "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," "[m]ere juxtaposition of features," and "[c]lose relation of technical fields." *See* JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.5(1), (2)(2).

35 *See KSR*, 127 S. Ct. at 1739–43 (discussing the obviousness rationales from prior Supreme Court cases).

36 *See Dann*, 425 U.S. at 227–28 (holding that the similarity of technical fields is viewed from a person having skill in the art); *Graham*, 383 U.S. at 36–37; *Concrete Appliances*, 269 U.S. at 185 (holding that obviousness is determined from the point of view of one of skill in the art).

similar technical fields. For example, in *Concrete Appliances Co. v. Gomery*,[37] the Court allowed the similarity of technical fields to be defined by either the function of the invention or the problems the invention solved.[38] On the other hand, in *Calmer, Inc. v. Cook Chemical Co.*,[39] and *Dann v. Johnston*,[40] the Court defined technical fields solely by the function of the invention.[41]

Second, some cases find a motivation to combine prior art references from different technical fields based on the problem solved by or the function of a particular element. For example, *Calmer* finds a motivation to combine prior art references when combination of the prior art solves similar problems.[42] Also, *Calmer* and *Dann* find a motivation to combine prior art references when the pieces of prior art have a close similarity of function, work, or operation.[43]

A. Determining When an Invention is Only "Ordinary Creativity"

The Japanese Guidelines provide several examples of steps that are deemed to be "exercises of ordinary creativity of a person skilled in the art."[44] These examples, "selection of an optimal material," "optimization of a numerical value range," and "workshop modification of design," describe steps that fail to satisfy the nonobviousness requirement.[45] The Japanese Guidelines state that:

> 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. When the difference of a claimed invention in comparison falls only under these categories, it is usually considered that a person skilled in the

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37 269 U.S. 177 (1925).

38 *Id.* at 184–85.

39 383 U.S. 1 (1966).

40 425 U.S. 219 (1976).

41 *See Dann*, 425 U.S. at 227–28 (discussing the functionality of the patentee's automatic data processing equipment); *Calmer*, 383 U.S. at 32–36 (discussing the importance of the sealing feature of the invention).

42 *Calmer*, 383 U.S. at 35.

43 *Id.*; *Dann*, 425 U.S. at 229.

44 JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.5(1).

45 *Id.*

> art could have easily arrived at it, unless otherwise there is another ground for inferring inventive step.[46]

An analysis of U.S. Supreme Court, Court of Customs and Patent Appeals, and Federal Circuit cases reveals that the "workshop modification" test is close to the holding in *Graham*.[47] The "optimization" test fits within the holdings of *KSR* and *In re Antonie*.[48]

1. Workshop Modification

The "workshop modification" rule states that modifying a prior invention to apply to a concrete apparatus or method is obvious.[49] For example, suppose that an applicant claims a bendable chemical-absorbent plate for holding plants without additional reinforcement.[50] The prior art contains a reference that explains a bendable chemical-absorbent plate for holding plants, and it is well-known in the art to use paper without reinforcement as a plant-holding foundation material.[51] To apply the common knowledge of using paper without reinforcement to the chemical-absorbent reference is obvious as mere workshop modification.[52]

Graham, *Calmer* and *United States v. Adam*[53] are cornerstones to formulating a general approach to the issue of patentability under § 103.[54] The patent at issue in *Graham* claimed a device designed to absorb shock from plow shanks as they plow through rocky soil, thereby preventing damage to the plow.[55] The only difference from the prior art was that "the position of the shank [was] re-

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46 *Id.* The Japanese system uses the term "inventive step" to explain the idea of obviousness. In this article the term "obviousness" is used to explain the idea except in citations of the Japanese Guideline.

47 *See* Graham v. John Deere Co., 383 U.S. 1, 26 (1966) (holding that modification of the shank produced no difference in mechanical operation).

48 *See* KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727, 1746 (2007) (holding the combination of an adjustable pedal and a fixed pivot sensor location obvious); *In re* Antonie, 559 F.2d 618, 620 (C.C.P.A. 1977) (holding the invention not obvious in view of the optimization test).

49 JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.5(1).

50 *Id.* at pt. 2, ch. 2, § 2.5(1) ex. 2.

51 *Id.* at pt. 2, ch. 2, § 2.5(1).

52 *Id.*

53 383 U.S. 39 (1966).

54 5 DONALD S. CHISUM, CHISUM ON PATENTS § 5.02[5] (2003) (citing United States v. Adams, 383 U.S. 39 (1966); Calmar, Inc. v. Cook Chemical Co., 383 U.S. 1 (1966); Graham v. John Deere Co., 383 U.S. 1 (1966)).

55 *Graham*, 383 U.S. at 19–21.

versed."[56] According to the patentee, this arrangement permitted a flexing motion to occur between the heel of the hinge plate and the bolted end of the shank.[57]

The Court found the patent obvious on two grounds. "First, anyone who wished to achieve such extra flex would naturally be led to the arrangement adopted by [the patentee]."[58] Specifically, extra flex "would be obtainable by not boxing the shank within the confines of the hinge."[59] Moreover, the Court explained that "[t]he only other effective place available in the arrangement was to attach it below the hinge plate and run it through a stirrup or bracket that would not disturb its flexing qualities."[60] The Court concluded that:

> Certainly a person having ordinary skill in the prior art, given the fact that the flex in the shank could be utilized more effectively if allowed to run the entire length of the shank, would immediately see that the thing to do was what [the patentee] did, i.e., invert the shank and the hinge plate.[61]

The *Graham* Court failed to discuss "whether it was obvious to one with ordinary skill in the pertinent art that extra flex was desirable or whether such an inquiry was appropriate under [§] 103,"[62] which makes classifying the Court's reasoning somewhat difficult. However, we might define the "lack of flex" as a problem whenever the shank is used. Because solutions to a "lack of flex" problem were generally within the expected skill of the art,[63] it seems reasonable to classify the patent in *Graham* as obvious under the "workshop modification of design" standard in the Japanese Guidelines. The patentees did not invent something new; they merely applied well-established general principles in the art to a particular problem and achieved a concrete result.[64]

2. Optimization of a Numerical Value Range

An invention is obvious as a mere "optimization of a numerical value range" when a person skilled in the art could have arrived at it easily, unless

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56 *Id.* at 22.

57 *Id.* at 23.

58 CHISUM, *supra* note 54, § 5.02[5][b].

59 *Graham*, 383 U.S. at 24.

60 *Id.* at 24–25.

61 *Id.*

62 CHISUM, *supra* note 54, § 5.02[5][b].

63 *Graham*, 383 U.S. at 23–24.

64 *See id.* at 25–26 (holding invention obvious in view of the prior art references).

there is reason to infer obviousness.[65] For example, suppose that sending or receiving infrared waves in the wavelength range of approximately 0.8 to 1.0 μm for the purpose of communicating information is recognized as a well-known art. Under these circumstances, the application of that art for determining and communicating the locations of emergency vehicles might be obvious as merely an optimization of a numerical value range, because of the absence of any obstruction that makes the preexisting technology difficult to apply to an apparatus for determining and communicating the position of those emergency vehicles.[66]

Antonie concerned a patent on "a wastewater treatment device in which wastewater is continuously passed through a tank . . . [and in which] contactors (disks) are continuously rotated."[67] The difference between this invention and the prior art was "a ratio of tank volume to contactor area of [about or at least about] 0.12 gal./sq. ft."[68] The patentee asserted that this difference "maximizes 'treatment capacity'" in that "using a lower value gives lower 'treatment capacity' and using a greater value gives no increase in 'treatment capacity,' merely increasing costs."[69] In a divided decision, the Court of Customs and Patent Appeals reversed the lower court's ruling of invalidity.[70] The court explained that, despite an earlier ruling "that the discovery of an optimum value of a variable in a known process is normally obvious," it "ha[s] found exceptions to this rule in cases where the results of optimizing a variable, which was known to be result effective, were unexpectedly good."[71] Thus, the court acknowledged that discovering an optimum value in a range is generally obvious, but held that the unexpected results weighed in favor of nonobviousness.[72] The court's reasoning in doing so mirrors the "optimization of a numerical value range" rule in the Japanese Guidelines.

KSR concerned a patent on a mechanism combining an electronic sensor with an adjustable automobile pedal.[73] The Supreme Court defined the issue as "whether a pedal designer of ordinary skill starting with [a particular patent]

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65 JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.5(1) ex. 1.

66 *Id.*

67 559 F.2d 618, 618 (C.C.P.A. 1977).

68 *Id.* at 619 & n.13.

69 *Id.* at 619.

70 *Id.* at 620.

71 *Id.* (citing *In re* Aller, 220 F.2d 454, 42 (C.C.P.A. 1955)).

72 *Id.*

73 KSR Int'l Co. v. Teleflex, Inc. 127 S. Ct. 1727, 1734 (2007).

would have found it obvious to put the sensor on a fixed pivot point."[74] Because a pivot point is "[t]he most obvious nonmoving point on the structure from which a sensor can easily detect the pedal's position,"[75] the Court held that the invention was obvious.[76] The Court also noted that "[a] person of ordinary skill is also a person of ordinary creativity, not an automaton."[77] Moreover, the Court held that a patent may be invalid as obvious if it was "obvious to try," explaining that:

> When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under § 103.[78]

Although *KSR* did not involve a numerical value range, locating the sensor on the most obvious nonmoving point can be seen as merely an optimization. The Court's reasoning is thus similar to that laid out in the "optimization" rule of the Japanese Guidelines.

3. Mere Combination of Features (Aggregation without Advantageous Effects)

Under the Japanese Guidelines, mere aggregation of features[79] without demonstrating any new advantageous effect is obvious as an "exercise of ordinary creativity of a person skilled in the art."[80] Specifically, the Japanese Guidelines state:

> If matters defining an invention are not linked [to] each other functionally or operationally and the invention is a combination of each matter (mere juxtaposition of features), the invention is deemed as a mere exercise of ordinary creativity of a person skilled in the art, unless otherwise there is another ground for inferring [the] inventive step.[81]

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74 *Id.* at 1744.

75 *Id.* at 1744–45.

76 *Id.* at 1746.

77 *Id.* at 1742.

78 *Id.*

79 In the Japanese Guidelines, this factor is named "[m]ere juxtaposition of features." JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.5(1)(2).

80 *Id.*

81 *Id.*

This Japanese Guidelines' rule is consonant with the rulings in *Hotchkiss v. Greenwood*,[82] *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*,[83] and *Sakraida v. Ag Pro, Inc*.[84]

Hotchkiss concerned a patent granted for "a new and useful improvement in making door and other knobs of all kinds of clay used in pottery, and of porcelain," having a dovetail-shaped cavity "in which the screw or shank is inserted."[85] The Supreme Court held that all elements of the invention "were well known, and in common use; and the only thing new is the substitution of a knob of a different material from that heretofore used in connection with this arrangement."[86] The Court concluded that "there was an absence of that degree of skill and ingenuity which constitute essential elements of every invention. In other words, the improvement is the work of the skillful mechanic, not that of the inventor."[87]

Anderson's-Black Rock involved a patent on a "[m]eans for [t]reating [b]ituminous [p]avement." [88] The patentee's invention was essentially the "placement of [a] radiant-heat burner upon the side of a standard bituminous paver."[89] The Supreme Court found that "[e]ach of the elements combined in the patent was known in the prior art."[90] It held the patent invalid, stating that "[t]he combination of putting the [old elements] together with the other elements in one machine, though perhaps a matter of great convenience, did not produce a 'new or different function'" from the functions of the separate elements.[91]

Sakraida concerned systems that used flowing water to clean animal waste from barn floors.[92] The only claimed inventive feature of the patent at issue was "the provision for abrupt release of the water from the tanks or pools

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82 52 U.S. 248 (1850).

83 396 U.S. 57 (1969).

84 425 U.S. 273 (1976). Also note that in *KSR*, the Supreme Court recalled that it has held that a "patent for a combination which only unites old elements with no change in their respective functions . . . obviously withdraws what is already known into the field of its monopoly and diminishes the resources available to skillful men." 127 S. Ct. 1727, 1739 (2007) (citing Great Atl. & Pac. Tea Co. v. Supermarket Equip. Corp., 340 U.S. 147, 152 (1950)).

85 *Hotchkiss*, 52 U.S. at 264.

86 *Id.* at 265.

87 *Id.* at 267.

88 *Anderson's-Black Rock*, 396 U.S. at 57.

89 *Id.* at 58.

90 *Id.* at 59.

91 *Id.* at 60 (citing Lincoln Eng'g Co. v. Stewart-Warner Corp., 303 U.S. 545, 549 (1938)).

92 Sakraida v. Ag Pro, Inc., 425 U.S. 273, 274 (1976).

directly onto the barn floor, which causes the flow of a sheet of water that washes all animal waste into drains within minutes and requires no supplemental hand labor."[93] The Court held that this patent "simply arranges old elements with each performing the same function it had been known to perform, although perhaps producing a more striking result than in previous combinations."[94] Consequently, the Court concluded that "[s]uch combinations are not patentable under standards appropriate for a combination patent."[95]

Each of these rulings is consonant with the Japanese Guidelines, which state that "mere juxtaposition of features" without some sort of advantageous effect from the combination is considered obvious.[96] Therefore, in both the U.S. and Japanese patent systems, a new combination of well-known elements without some degree of skill and ingenuity is considered unpatentable.

B. Probable Cause or Motivation

In the Japanese Guidelines, there are several factors involved when analyzing a patent's probable cause or motivation. One of these factors includes "[s]uggestions shown in the contents of cited inventions."[97] This factor is equivalent to the Federal Circuit's so-called "suggestion test."[98] The other pertinent factors in the Japanese Guidelines will be examined by comparison to relevant U.S. cases.

1. Close Relation of Technical Fields

According to the Japanese Guidelines:

> An attempt to apply a technical means in a related technical field in order to solve a problem is a mere exercise of ordinary creativity of a person skilled in the art. A replaceable or add-able means in a related technical field, for example, can be a strong ground for the reasoning that a person skilled in the art would have been led to a claimed invention.[99]

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93 *Id.* at 277.

94 *Id.* at 282.

95 *Id.*

96 JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.5(1)(2).

97 *Id.* at pt. 2, ch. 2, § 2.5(2)(4).

98 *See In re* Dembiczak, 175 F.3d 994, 1003 (Fed. Cir. 1999) (explaining that "[b]ecause there is no evidence in the record of a suggestion, teaching, or motivation to combine the prior art references asserted against the pending claims, the obviousness rejections are reversed").

99 Japanese Guidelines, *supra* note 18, at pt. 2, ch. 2, § 2.5(2)(1).

The Japanese Guidelines offer as an example that because a camera and an automatic flash are always used together and are closely related that the application of a control element of a photometric circuit for the camera to a photometric circuit for the automatic flash is obvious as it "would have been easily made by a person skilled in the art, unless an outstanding structure is utilized in terms of the application."[100]

Of the relevant U.S. case law discussing this very aspect, the cases of *Concrete Appliances* and *Calmar* stand out. Moreover, the discussions in *Dann* and *KSR* are similarly applicable. In each of these cases, the Supreme Court offered guidance on how to determine the relevant technical field. For example, in *Concrete Appliances*, the Court explained that the technical field could be defined based on the relevant problem.[101] However, the decisions of *Calmar* and *Dann* make it uncertain as to whether the technical field is defined based on an aspect of function.

Concrete Appliances concerned a patent on a "device [that] calls into operation gravity, in conveying mobile substances from an elevated central point to varying working points in building operations."[102] The Court held that, for many centuries before the patentee's application, "the principle of conveying and distributing a mobile substance by gravity has found exemplification" and has been applied to numerous substances, including "grain, coal, crushed stone, sand, and iron ore."[103] In addition, the use of wet concrete in building construction was well known at that time.[104] The Court noted that:

> The observations of common experience in the mechanical arts would lead one to expect that, once the feasibility of using 'wet' concrete in building operations was established, the mechanical skill of those familiar with engineering and building problems would seek to make use of known methods and appliances for the convenient handling of this new building material.[105]

Ultimately, the Court invalidated the patent, explaining that:

> Failure to make use of these obviously applicable methods and appliances in combination, suitable to the particular work in hand, in dealing with a new, plastic material capable of similar treatment, would, we think, have evidenced

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100 *Id.*

101 Concrete Appliances Co. v. Gomery, 269 U.S. 177, 184 (1925).

102 *Id.* at 178.

103 *Id.* at 180–81.

104 *Id.* at 182.

105 *Id.* at 184.

> a want of ordinary mechanical skill and of familiarity with construction problems and methods.[106]

When engineering and building are viewed as one technical field, it is possible to recognize that this judgment mirrors the "close relation of technical fields" standard found in the Japanese Guidelines,[107] because the Court categorized all engineers familiar with the relevant engineering and building problems within the same group. At the same time, the focus on the "wet concrete" itself (a material frequently used in the construction industry) is a key element of this decision and it gives useful guidance on how the Court determined the scope of the technology, function, and problem. Accordingly, it is possible to say that the close relation of technical fields is defined in relation to the function or problem. Moreover, as will be discussed in a later portion of this article, this decision also could be categorized under other relevant standards of the Japanese Guidelines.

Calmar concerned a patent involving a seal created by the use of a washer pressed against the upper surface of a container cap and positioned differently than in the relevant prior art pertaining to finger-operated insecticide sprayers.[108] One particular pierce of prior art involved a similar seal in the same position on a pouring spout for a liquid container, but not specifically on finger-operated insecticide sprayers.[109] The Supreme Court said that "[t]he problems confronting [the patentee] and the insecticide industry were not insecticide problems; they were mechanical closure problems."[110] Moreover, the Court said that "[c]losure devices in such a closely related art as pouring spouts for liquid containers are at the very least pertinent references."[111]

When container closures are viewed as one technical field, this decision also falls under the "close relation of technical fields" standard in the Japanese Guidelines.[112] At the same time, the Court defines the relevant problem in this case as relating to "mechanical closure problems."[113] In this sense, it could be determined that the close relation of technical fields is defined based on the mechanical closure problems. Moreover, as will be discussed in a later portion of

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106 *Id.* at 184–85.

107 JAPANESE EXAMINATION GUIDELINES, *supra* note 18, pt. 2, ch. 2, § 2.5(2)(1).

108 Calmar, Inc. v. Cook Chem. Co., 383 U.S. 1, 26 (1966).

109 *Id.* at 31.

110 *Id.* at 35.

111 *Id.*

112 JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.5(2)(1).

113 *Calmar*, 383 U.S. at 35.

this article, this decision also could be categorized under other relevant standards of the Japanese Guidelines.

Dann involved a patent on a "machine system for automatic record-keeping of bank checks and deposits."[114] The Supreme Court concluded that the patented invention was obviously based on a combination of two prior art programs for complex data processing.[115] Specifically, the Court held that "the departments of the business organization and the areas or 'Item Groups' under the Dirks system are closely analogous to the bank customers and category number designations respectively under respondent's system."[116]

When this decision is viewed in light of the Japanese Guidelines, this judgment may be categorized under the "close relation of technical field" standard, because the Supreme Court concluded that the extensive use of the system of the bank industry in the business organization and the industry to which the Dirks system belongs can been identified by the person of ordinary skill in the art.[117] At the same time, the Court mentioned the claimed invention's "characteristics and capabilities" in its decision whether the two industries were closely analogous.[118] In other words, the Court explicitly considered an aspect of a problem/function in its decision. In this sense, the Court's decision could be categorized under the Japanese Guidelines standard.

The decision in *KSR* primarily could be categorized as "optimization" according to Japanese Guidelines factors.[119] However, it is also possible to classify the decision under the "close relation of technical field" standard in the Japanese Guidelines,[120] as the Supreme Court discussed the need for inquiry into how the pedal designer might combine each of the elements of the alleged patent based on his or her knowledge.[121] Specifically, the Court explained:

> The '936 patent taught the utility of putting the sensor on the pedal device, not in the engine. Smith, in turn, explained to put the sensor not on the pedal's footpad but instead on its support structure. And from the known wire-chafing problems of Rixon, and Smith's teaching that "the pedal assemblies

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114 Dann v. Johnston, 425 U.S. 219, 220 (1976).

115 *Id.* at 230.

116 *Id.* at 229.

117 *Id.* (noting that it can be assumed that such a hypothetical person would have been aware both of the nature of the extensive use of data processing systems in the banking industry and of the system encompassed in the Dirks patent).

118 *Id.* at 229.

119 *See* discussion *supra* Part II.A.2.

120 JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.5(2)(1).

121 KSR Int'l Co. v. Teleflex, Inc., 127 S. Ct. 1727, 1740–41 (2007).

> must not precipitate any motion in the connecting wires," the designer would know to place the sensor on a nonmoving part of the pedal structure.[122]

2. Close Similarity of a Problem to be Solved

Comparing the problem to be solved is the second aspect to be considered when determining probable cause or motivation to combine. Three kinds of problematic similarities are shown in the guidelines.

The first category includes situations where the prior art solves problems similar to the claimed invention.[123] The Japanese Guidelines explain that "[a] close similarity of a problem to be solved can be a strong ground for the reasoning that a person skilled in the art would be led to a claimed invention by applying or combining cited inventions."[124]

The second category includes situations in which an examination "based on the state of the art should be conducted [as to] whether a problem to be solved is evident or whether it would have been easily conceived."[125] For instance, "'to save costs and space' of the claimed invention concerned is a general problem not only of a mixer but of every device."[126]

The third category includes situations where the cited art solves a problem different from the problem that was solved in the claimed invention.[127] Such a situation could give rise to a finding of obviousness if a person of ordinary skill in the art could have easily arrived at the claimed invention in a way of thinking from the solution of the problem.[128] The Japanese Guidelines provide several examples, including the following:

> The claimed invention is a carbon disk brake with grooves to drain water on its face. The cited document 1 discloses a carbon disk break. The cited document 2 discloses a metal disk brake with grooves to remove dust on its face. In this case, it is clear that dust on the face prevents the brake even for the carbon disk brake . . . in the light of the general function of the brake.[129]

In this reasoning, however, there is a requirement. The guidelines say that "if the applicant . . . provides sufficient arguments or evidence of a situation

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122 *Id.* at 1744 (internal citation omitted).

123 JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.5(2)(2).

124 *Id.*

125 *Id.*

126 *Id.*

127 *Id.*

128 *Id.*

129 *Id.*

where the combination of the technologies of cited inventions . . . is obstructed, . . . an inventive step of the claimed invention cannot be denied from the disclosure of the cited documents."[130] For example, in the example of a disk brake, if "it is the common general knowledge that carbon disk brakes have no dust problem unlike metal disk brake[s], there would be no reason to conceive a carbon disk brake with grooves for the purpose of removing dust."[131]

Four cases will be shown where the decisions made were related to the problems described earlier. First, it is advantageous to look at *Calmar* to scrutinize an aspect of the "same problem" as mentioned earlier. From *Calmar*, one could argue that the problem may include an aspect of function.[132] Second and third, *Concrete Appliances* and *Graham* will be examined, as an aspect of the "common technical problem."[133] In short, we could say that the aspect of common technical problems could be combined with an aspect of a close relation of technical field, such as in the case of *Concrete Appliances*.[134] Fourth, it is possible to see in *In re Beattie*[135] an aspect of the "different problem" from the claimed inventions, which is equivalent to the Japanese aspect.[136]

Calmar falls into the classification of "close relation of technical fields" as provided by the Japanese factors for novelty and inventive step.[137] It can also be viewed the as adopting a "problem-solving" approach,[138] and could therefore be categorized into the "same problem" factor in the Japanese Guidelines.[139] This is because the Court combined prior arts on the grounds of common "mechanical closure problems."[140] Moreover, the "mechanical closure problems" could introduce an aspect of function.[141] In this sense, we could say the problems are very close to function. If this is so, the *Calmar* decision could be put into another Japanese type of reasoning, which can be seen in a later subsection.

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130 *Id.*

131 *Id.*

132 Calmar, Inc. v. Cook Chem. Co., 383 U.S. 1, 32–33 (1966) (noting the patent prosecution history of the vague and indefinite patent application).

133 JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.5(2)(2).

134 Concrete Appliances Co. v. Gomery, 269 U.S. at 178–80.

135 974 F.2d 1309 (Fed. Cir. 1992).

136 *See* JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.5(2)(2).

137 *Id.*

138 Edmund W. Kitch, Graham v. John Deere Co.*: New Standards For Patent*s, 1966 SUP. CT. REV. 293, 335–41 (1966) (discussing the "problem-solving" approach to discerning the prior art from claims at issue in a patent application).

139 JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.5(2)(2).

140 Calmar v. Cook Chem., Co., 383 U.S. 1, 35 (1966).

141 *Id.*

Concrete Appliances can be categorized in the "close relation of technical fields" factor previously discussed if focus is placed on "the mechanical skill of those familiar with engineering and building problems."[142] However, if focus is placed on "a want" of a machine for wet concrete, such as one for preventing leaking, there is support for the main reasoning.[143] This judgment can also be categorized as a "common technical problem."[144]

Furthermore, an aspect of *Graham* can be classified into the "workshop modification of design" factor if "flex" is considered to be a desire achieved whenever a person uses "the shank."[145] But if "flex" is defined as a problem, the judgment can be categorized into the category of "common technical problem."[146]

Prof. Donald Chisum has noted that "[d]ecisions hold that the suggestion test may be met even though the prior art suggests the modification or combination for a purpose or advantage different from that of the inventor."[147] *Beattie* is cited as an example.[148] *Beattie* involves a patent related to a combination of a "traditional musical notation" with a twelve-tone numbering system of another's previous patent by superimposing the numbers over the traditional notes.[149] Three relevant patents existed in the prior art.[150] These three patents covered all of the elements of the patent at issue.[151] Two of the patents designated chromatic halftones numerically but contained some differences from each other.[152] The patentee pointed out these differences as "the absence of a single express teaching of a marker with the two theories combined."[153] However, the court stated "[a]s long as some motivation or suggestion to combine

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142 Concrete Appliances Co. v. Gomery, 269 U.S. 177, 184 (1925); *see* discussion *supra* Part II.A.1.

143 *Id.*

144 JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.5(2)(2).

145 *See* Graham v. John Deere Co., 383 U.S. 1, 23 (1966) (noting that Graham "did not urge before the Patent Office the greater 'flexing' qualities of the '798 patent"); discussion *supra* Part II.A.1.

146 *See* discussion *supra* Part II.A.2; s*ee also* discussion *supra* Part II.A.1.

147 CHISUM, *supra* note 54, § 5.04[1][e][vii] (citing *In re* Beattie, 974 F.2d 1309, 1310 (Fed. Cir. 1992)).

148 *Id.*

149 *In re Beattie*, 974 F.2d at 1310.

150 *Id.* at 1311.

151 *Id.*

152 *See id.* at 1311–13 (discussing that the Eschemann patent uses numerical notation, while the Guilford patent uses alphabetical notation).

153 *Id.* at 1312.

the references is provided by the prior art taken as a whole, the law does not require that the references be combined for the reasons contemplated by the inventor."[154] In reaching this holding, the Federal Circuit cites a 1972 Court of Customs and Patent Appeals case—*In re Lintner*.[155]

When the *Beattie* decision is evaluated on the grounds of the Japanese standard, the judgment becomes categorized as a "different problem" according to the Japanese factors;[156] the same as those mentioned by Prof. Chisum earlier.

3. Close Similarity of Function, Work, or Operation

The third aspect is "function, work, or operation."[157] "If a close similarity in function, work, or operation exists between a claimed invention and a cited invention or between cited inventions, there can be a well-founded reasoning" to combine the cited inventions.[158] For example, if two inventions in different technologies have very similar features relating to a "pressure means," then the features of one of the inventions could be applied as the pressure means of the other invention in an inquiry for nonobviousness.[159] This aspect is seen in *Calmar* and *Dann*. Both cases mention function as being very close to problems.

Calmar can be categorized as a "close relation of technical fields" and the "same problem" according to the Japanese factors[160] based on "mechanical

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154 *Id.*

155 *Id.* (citing *In re* Lintner 458 F.2d 1013, 1016 (C.C.P.A. 1972)). The *Linter* case involves a patent application for laundry compositions comprised of organic cationic fabric softener and sugar. 458 F.2d at 1014. There is a principal piece of prior art which shows the use of the organic softener, and another secondary prior art which shows the use of sugar as a filler. *Id.* at 1014–15. The court held that the invention (patent application) is obvious based on the grounds of these two prior art references. *Id.* at 1016. Meanwhile, the appellant patentee contended that "the sugar is responsible for the compatibility of the cationic softener." *Id.* at 1015. The court noted that "[i]n the present case, we are satisfied that Rheiner and Speel do suggest the use of a sugar with conventional laundry compositions such as that disclosed in Germann. The fact that appellant uses sugar for a different purpose does not alter the conclusion." *Id.* at 1016. The court also mentioned that the patentee's contention was not persuasive because the compatibility is not a new significant effect of the patent, which could be seen in the first prior art. *Id.*

156 *See* discussion *supra* Part II.A.2.

157 JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.5(2)(3).

158 *Id.*

159 *Id.* (noting example 1).

160 JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.5(2)(2); *see* discussion *supra* Part II.A.2.

closure problems."[161] At the same time, we can recognize the closure as a function.[162] Therefore, we can also categorize this decision into "close similarity of function" according to the Japanese factors.[163]

Dann can be categorized into the "close relation of technical field" according to the Japanese factors, if focus is placed on "closely analogous" business areas, such as bank customers and category number designations.[164] At the same time, the Court mentioned "[claimed inventions] characteristics and capabilities" in its decision whether these two industries are closely analogous.[165] In other words, the Court considered an aspect of a problem and/or function in its decision.[166] Therefore, we can categorize this decision into the "close similarity of function" category of the Japanese factors.[167]

C. Obstruction

As discussed above,[168] "sufficient arguments or evidence of a situation [when] the combination of the technologies of cited inventions . . . is obstructed" may overcome a combination of prior art that would otherwise render an invention obvious.[169] In *Adams* the Supreme Court discussed both obstruction[170] and advantageous effects when considering whether two pieces of prior art could be combined.[171] The patent in *Adams* concerned a magnesium electrode and a cuprous chloride electrode in a container.[172] While every element of

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161 Calmar, Inc. v. Cook Chem. Co., 383 U.S. 1, 35 (1966).

162 *Id.*

163 JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.5(2)(2).

164 Dann v. Johnston, 425 U.S. 219, 227 (1975); JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.5(2)(2); *see also* discussion *supra* Part II.A.1.

165 *Dann*, 425 U.S. at 229.

166 *Id.* at 228–30.

167 JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.5(2)(2).

168 *See* discussion *supra* Part II.A.2.

169 JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.5(2)(2).

170 In this sentence, the term obstruction has the same meaning as "teaching away from the invention." Prof. Merges introduced *Arkie Lures, Inc. v. Gene Larew Tackle, Inc.*, 119 F.3d 953, 957 (Fed. Cir. 1997), as an example of "teaching away from the invention." ROBERT P. MERGES & JOHN F. DUFFY, PATENT LAW AND POLICY: CASES AND MATERIALS 701, 719–27 (3d ed. 2002).

171 *See generally* United States v. Adams, 383 U.S. 39, 48–52 (noting the Court's allowance of the Adams patent on grounds for nonobviousness after the Court found the combination of prior art to be novel).

172 *Id.* at 42.

the invention was in the prior art, the Court cited the difficulty of combining prior arts as proof of nonobviousness and concluded that "known disadvantages in old devices which would naturally discourage the search for new inventions may be taken into account in determining obviousness."[173] This reasoning in *Adams* closely mirrors the Japanese Guidelines. It reflects the theory that evidence of obstruction to combination may render a combination nonobvious.

D. Advantageous Effects

Similar to the obstruction discussed above,[174] advantageous effects compared to the cited invention, i.e. synergistic effects, are persuasive evidence for nonobviousness.[175] There are two requirements to achieve these effects. First, the advantageous effects should be nonobvious.[176] The Japanese Guidelines say that when the advantageous effect of the claimed invention is so remarkable that it cannot be foreseen by a person of ordinary skill in the art it is nonobvious.[177] Second, the effects are supposed to be disclosed in the specification either explicitly or implicitly.[178] The guidelines say that if the advantageous effects of the claimed inventions "can clearly be identified from descriptions in the specification and the drawings, it is taken into consideration as a fact to support [and] affirmatively infer its inventive step."[179]

In the U.S. system the advantageous effects have also been accepted as persuasive proof of nonobviousness in the Supreme Court, Court of Customs and Patent Appeals, and Federal Circuit. The Supreme Court has relied on the existence of advantageous effects when the conclusion is that the claimed invention is obvious. For example, in *Hotchkiss*, Justice Samuel Nelson of the Supreme Court said, "I did not then suppose, nor do I now, that this could make any difference, unless it was the result of some new contrivance or arrangement

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173 *Id.* at 52.

174 *See* discussion *supra* Part II.C.

175 JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.5(3)(2).

176 *Id.*

177 *Id.*

178 *Id.* ("Where advantageous effects compared to cited inventions are described in a specification, or where advantageous effects are not explicitly described but can be inferred from the statements in the specification or the drawings by a person skilled in the art, the effects asserted or verified (e.g., experimental results) in a written argument, etc. should be considered. However, the effects asserted in the written argument, which are not described in the specification and that a person skilled in the art couldn't deduce from the description of the specification or the drawings, should not be taken into consideration.").

179 *Id.*

in the manufacture."[180] In addition, lower courts have followed the Supreme Court's decision. For example, in *Antonie* the Court of Customs and Patent Appeals said "[w]e have found exceptions to this rule in cases where the results of optimizing a variable, which was known to be result effective, were unexpectedly good."[181] This decision could be interpreted as holding that the advantageous effects can overcome the reasoning of obviousness, such as "optimization" according to the Japanese factors.[182]

On the other hand, in *Graham* the Court rejected the petitioners' argument based on the advantageous effects, "free-flex theory," because such "flex" was not emphasized as an advantage in the examination procedure.[183] The Court said that "[p]etitioners' argument basing validity on the free-flex theory raised for the first time on appeal is reminiscent of [a prior case] where [this] Court called such an effort 'an afterthought.'"[184] This decision can be interpreted as holding that the advantageous effects must be described at an early stage of the examination procedure. This type of reasoning is close to the Japanese standards, which require applicants to include these effects in the specification.[185]

There is only one decision, *Adams*, in which the Supreme Court upheld a patent and discussed the effects.[186] As noted above, the Court held the patent to be valid as it was not obvious in the light of the given prior art, even though all of the elements of the Adams patent appeared to be included in any one of the prior arts individually.[187] The Court stated that "[the prior art] disclosed the use of magnesium in an electrolyte completely different from that used in Adams."[188] Consequently, the Court held that "the Adams battery 'wholly unexpectedly' has shown 'certain valuable operating advantages over other batteries' while those from which it is claimed to have been copied were long ago discarded."[189]

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180 Hotchkiss v. Greenwood, 52 U.S. 248, 266 (1850). However, in regards to the alleged inventions, the Court didn't consider the better and cheaper article as an advantageous effect of this invention, because this merit is not new. *Id.*

181 *In re* Antonie, 559 F.2d 618, 620 (C.C.P.A. 1977).

182 JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.5(1)(1).

183 Graham v. John Deere Co. 383 U.S. 1, 25 (1966).

184 *Graham*, 383 U.S. at 25 (citing Lincoln Eng'g Co. v. Stewart-Warner Corp., 303 U.S. 545 (1938)).

185 JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.5(3)(2).

186 *See* United States v. Adams, 383 U.S. 39, 48–52 (1966) (noting the validity of the Adams patent and its effects).

187 *See id.* at 52; *see* discussion *supra* Part II.C.

188 *Adams*, 383 U.S. at 50.

189 *Id.* at 51.

E. Secondary Consideration (Commercial Success)

Under the Japanese Guidelines, secondary considerations, such as commercial success, "can be taken into consideration in order to support . . . an inventive step, insofar as the examiner finds that the fact is established by the features of a claimed invention, not by any other factors such as sales promotion techniques and advertisement through an applicant's legitimate assertions or substantiations."[190]

The Supreme Court displayed an equivalent rule on the secondary consideration in *Calmar*.[191] At the beginning of the decision, the Court succinctly stated: "[s]uch secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy."[192] However, in the actual holding of *Calmar*,[193] the Court displayed a very generous view. It stated:

> [T]he long-felt need in the industry for a device such as Scoggin's together with its wide commercial success supports its patentability. These legal inferences or subtests do focus attention on economic and motivational rather than technical issues and are, therefore, more susceptible of judicial treatment than are the highly technical facts often present in patent litigation.[194]

F. Evidentiary Record

In the Japanese system, it is necessary to build up "the state of the art" with references.[195] According to the Japanese Guidelines, "'the state of the art' at the time of filing a patent application is constituted as 'an invention or inventions referred to in any of the paragraphs of Subsection (1)'[196] and the common general knowledge[197] and other publicly known technical matters."[198] Moreover,

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190 JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.8(6).

191 Calmar, Inc. v. Cook Chem. Co., 383 U.S. 1, 17 (1966).

192 *Id.* at 17–18.

193 *Id.* at 37.

194 *Id.* at 35–36.

195 JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, §§ 2.2(2), 2.4(3), 2.8(2).

196 *See supra* note 27 and accompanying text.

197 "The common general knowledge" means technologies generally known to a person skilled in the art (including well-known or commonly used art) or matters clear from empirical rules. "Well-known art" means technologies generally known in the relevant technical field, e.g., many prior art documents, those widely known throughout the industry, or those well-known

the guidelines state that a "well-known or commonly used art should be accompanied with an exemplary document insofar as possible except when it is so well-known that any evidential document seems unnecessary".[199]

This Japanese rule is the same as the U.S. system's "articulated" reasoning. For example, in *Alza Corp. v. Mylan Laboratories, Inc.*,[200] the Federal Circuit noted that "there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness."[201] Moreover, in *KSR* the Supreme Court stated:

> Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicit.[202]

III. JUDICIAL OBVIOUSNESS DOCTRINES IN THE U.S. THAT COULD BENEFIT FROM CLARIFICATION

This section will focus on the U.S. interpretation of *Graham*. According to Prof. Chisum, there are various interpretations of *Graham*, such as "analogous art," "the nature of the problem," "suggestion for a different purpose," and "obvious to try" for optimization in the U.S.[203] Since the last two interpretations are consistent with the above discussion, the first two interpretations will be discussed in this section and examined under the Japanese standards.

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to the extent needless to present examples. "Commonly used art" means well-known art which is used widely. JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 1.2.4(3).

198 *Id.* at pt. 2, ch. 2, § 2.2(2).

199 *Id.* at pt. 2, ch. 2, § 2.8(2).

200 464 F.3d 1286 (Fed. Cir. 2006).

201 *Id.* at 1291 (quoting *In re* Kahn, 441 F.3d 977, 987–88 (Fed. Cir. 2006)). The court also said "[t]his requirement is as much rooted in the Administrative Procedure Act [for our review of Board determinations], which ensures due process and non-arbitrary decision making, as it is in § 103." *Id.* (quoting *Kahn*, 441 F.3d at 987–88)) (modification in original).

202 KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727, 1740–41 (2007). The USPTO quoted this part in an internal memo and stated that "in formulating a rejection under 35 U.S.C. § 103(a) based upon a combination of prior art elements, it remains necessary to identify the reason why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed." Memorandum from Margaret A. Focarino, Deputy Comm'r for Patent Operations, U.S. Patent & Trademark Office, to Tech. Ctr. Dirs (May 3, 2007) (on file with author).

203 CHISUM, *supra* note 54, § 5.04[1][f].

A. Analogous Art

U.S. case law establishes the analogous arts test as consisting of two steps: 1) the applicant's endeavor, and 2) a determination of reasonable pertinence to the problem with which the inventor was concerned.[204]

Potts v. Creager[205] concerned a patent on a "device [of a clay disintegrator] closely resembl[ing] a prior device used for an entirely different purpose – wood polishing."[206] The Court stated, generally, that:

> [I]f the new use be so nearly analogous to the former one that the applicability of the device to its new use would occur to a person of ordinary mechanical skill, it is only a case of double use; but if the relations between them be remote, and especially if the use of the old device produce [sic] a new result, it may at least involve an exercise of the inventive faculty.[207]

Regarding the device, the Court stated that "if the change from the glass bars of the Creager wood exhibit to the steel bars of the Potts cylinder was a mere change of material for the more perfect accomplishment of the same work, it would . . . not involve invention."[208]

The Court found that the purpose of changing material was "wholly [sic] different from that for which they had been employed."[209] Consequently, the Court concluded, "we have repeatedly held that a change of material was invention."[210] In other words, the Court defined this case as non-analogous. When viewed on the grounds of the Japanese standard, the purpose of changing material, which the Court mentioned in order to recognize the invention, fits into the "same problem" factor.[211] In addition, the "accomplishment of the same work" standard, which the Court focused on to scrutinize the invention, can be categorized into the "close similarity of function" factor.[212]

In *KSR*, the Supreme Court performed an analogous art analysis by noting that "[u]nder the correct analysis, any need or problem known in the field of

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204 *Id.* at § 5.03[1], [1][a][ii].(noting that the Federal Circuit adopted a "two-step test" for determining whether particular references are within the appropriate scope of analogous art by citing *In re* Deminski, 796 F.2d 436 (Fed. Cir. 1986)).

205 155 U.S. 597 (1895).

206 CHISUM, *supra* note 54, § 5.03[1][a][i].

207 *Potts*, 155 U.S. at 608.

208 *Id.*

209 *Id.* at 609.

210 *Id.*

211 *See* JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.5(2)(2).

212 *See Id.* at pt. 2, ch. 2, § 2.5(2)(3).

endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed."[213] In addition, it stated that "[t]he proper question to have asked was whether a pedal designer of ordinary skill, facing the wide range of needs created by developments in the field of endeavor, would have seen a benefit to upgrading Asano with a sensor."[214] The Court then mentioned each prior art reference and concluded that a pedal designer of ordinary skill learned and knew all problems in a quoted prior art.[215] Therefore, in this sense, the field of endeavor is the same as the technological field of the pedal, which fits into "close relation of technical fields," as we have seen above.[216]

In *In re Winslow*[217] the Court of Customs and Patent Appeals stated that "[t]he essential issue with respect to patentability resides in a consideration of the difference in the means employed to hold a stack of bags. Appellant employs a plurality of pins which pass through openings in the stack of bags. Such pins are not disclosed in Gerbe."[218] In addition, the Court said that all prior art was related to using pins for holding bags.[219] Moreover, the Court stated, "we see nothing important in the change from a vertical to a horizontal position of the bags."[220] The Court continued by stating, "[t]he change requires only obvious mechanical adaptations such as substituting a spring to push up instead of a weight to slide down," and concluded that the prior art was only different from the patent mentioned in the context of a position.[221]

As a result, the Court explained that if a hypothetical inventor was working on any bag holding problem in his workshop, he would be:

> Looking around the walls, he would see Hellman's envelopes with holes in their flaps hung on a rod. He would then say to himself, "Ha. I can punch holes in my bags and put a little rod (pin) through the holes." . . .
>
> Thus does appellant make his claimed invention merely by applying knowledge clearly present in the prior art.[222]

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213 KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727, 1742 (2007).

214 *Id.* at 1744.

215 *Id.*

216 *See* discussion *supra* Part II.A.1.

217 365 F.2d 1017 (C.C.P.A. 1966).

218 *Id.* at 1019.

219 *Id.* For example, the court said, "[one prior art] is in the very same art and has 'pin means,' notwithstanding the fact he calls it a 'rod.'" *Id.*

220 *Id.* at 1020.

221 *Id.*

222 *Id.*

This seems to explain that the field of invention's endeavor seems to include not only the knowledge in a certain industry, but also general common knowledge which includes technologies generally known in the relevant technical field, widely known throughout the industry. The Court clarified the definition, that "[§] 103 requires us to presume full knowledge by the inventor of the prior art in the field of his endeavor."[223] Moreover, it noted that "only selection and application by the examiner of very pertinent art."[224]

When *Winslow* is examined under the Japanese standard, the judgment is categorized into the "close relation of technical field" factor due to the Court's categorization of a prior art into the "very same art" and "pertinent art."[225] Additionally, it can be categorized into the "close similarity of function" because "the field of his endeavor," i.e., the field of the pin for the holding bag, was mentioned to group the prior art as analogous in this decision.[226]

In *In re Antle*,[227] the Court mentioned the two steps of the analogous art test, especially the second step that:

> [Section 103] does not require us to presume full knowledge by the inventor of prior art outside the field of his endeavor, i.e., of 'non-analogous' art. In that respect, it only requires us to presume that the inventor would have that ability to select and utilize knowledge from other arts reasonably pertinent to his particular problem which would be expected of a man of ordinary skill in the art to which the subject matter pertains.[228]

The Court defined that McLaren's patent and Allen's patent "would certainly seem to suggest combining at least these two references."[229] Moreover, the Court decided that the other two references could be combined with McLaren's patent and Allen's patent, because they were in very close relationship to Allen's patent.[230]

It is difficult to analyze *Antle* under the Japanese factors, because the reasoning for combining McLaren's patent and Allen's patent is not clear. If "seem to suggest combining" is stressed in this decision and interpreted literally, it can be categorized into the "suggestion" category of Japanese factors.[231] But

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223 *Id.*

224 *Id.*

225 *Id.* at 1019–20; *see also* discussion *supra* Part II.A.1.

226 *Id.* at 1020; *see also* discussion *supra* Part II.A.3.

227 444 F.2d 1169 (C.C.P.A. 1971).

228 *Id.* at 1171–72.

229 *Id.* at 1172.

230 *Id.*

231 *Id.*; *see also* discussion *supra* Part II.A.2.

if Allan's patent's object, "preserving fresh produce," is read from McLaren's patent, then the decision can be categorized into the "similar problem" category of Japanese factors.[232] Moreover, the decision can be categorized into "close relation of technical fields" by focusing on a combination of Allan and the other two references.[233]

The case of *In re Deminski*[234] concerned a patent "relat[ing] generally to double-acting high pressure gas transmission compressors."[235] After mentioning the two steps of the analogous art test, the Court concluded "that the cited pumps and compressors have essentially the same function and structure" and they are "within the field of the inventor's endeavor."[236] This judgment can be categorized into the "close similarity of function" when examined under the Japanese standard.[237] Additionally, it can also be categorized into "close relation of technical fields" if pumps and compressors are viewed as close technical fields.[238]

In re Clay[239] dealt with a patent claiming "a process for storing refined liquid hydrocarbon product in a storage tank having a dead volume between the tank bottom and its outlet."[240] The USPTO invalidated the patent as obvious on the grounds of two references:

> [Hetherington], which discloses an apparatus for displacing dead space liquid using impervious bladders, or large bags, formed with flexible membranes; and [Sydansk], . . . which discloses a process for reducing the permeability of hydrocarbon-bearing formations and thus improving oil production, using a gel similar to that in [applicant's] invention.[241]

The Federal Circuit reversed the ruling, stating that the references employed by the USPTO were not analogous art.[242] The courts consider art analo-

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232 *See* discussion *supra* Part II.A.2.

233 *Antle*, 444 F.2d at 1172; s*ee also* discussion *supra* Part II.A.1.

234 796 F.2d 436 (Fed. Cir. 1986).

235 *Id.* at 437; CHISUM, *supra* note 54, § 5.03[1][a][ii][D] (citing *In re* Deminski, 796 F.2d 436 (Fed. Cir. 1986)). *In re* Deminiski is also introduced in the Manual of Patent Examining Procedure as an example of "analogy in the mechanical arts." U.S. PATENT & TRADEMARK OFFICE, MANUAL OF PATENT AND EXAMINING PROCEDURE § 2141.01(a)(IV) (8th ed., rev. 6 2007).

236 *Deminski*, 796 F.2d at 442.

237 *See* discussion *supra* Part II.A.3.

238 *See* discussion *supra* Part II.A.1.

239 966 F.2d 656 (Fed Cir. 1992).

240 *Id.* at 657.

241 *Id.* at 658.

242 *Id.* at 660.

gous only if it is from the inventor's field of endeavor or if it is reasonably pertinent to the problem with which the inventor was concerned.[243] Here, the Court defined the inventor's field of endeavor as "the *storage* of refined liquid hydrocarbons" rather than the petroleum industry, as a whole.[244] Further, the Court held that the problem dealt with by the reference, recovering oil from rock, was not reasonably pertinent to the inventor's problem of "preventing loss of stored product to tank dead volume while preventing contamination of such product."[245]

When the decision is analyzed on the grounds of the Japanese standard, an aspect of the judgment is categorized into the "close similarity of technical fields" factor because the Court defined the inventor's field of endeavor as "the storage of refined liquid hydrocarbons."[246] However, since "the storage of refined liquid hydrocarbons" may also be seen as a function or work, the decision may also be categorized into the "close similarity of function."[247] Moreover, if the process is considered under the function, "the problem dealt with by the reference," an aspect of this decision may also be categorized into the "close similarity of problem to be solved", such as "common problem" or "same problem."[248]

In *In re Kahn*[249] the Federal Circuit held that the "analogous-art test requires that the Board show that a reference is either in the field of the applicant's endeavor or is reasonably pertinent to the problem with which the inventor was concerned in order to rely on that reference as a basis for rejection."[250] The case involved a patent on a "'reading machine' that may be used by the blind."[251] As prior art, there were "machines that employed memory and display components by which material could be 'read' using hand-held optical pens and speech syn-

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243 *Id.* at 658–59.

244 *Id.* at 659.

245 *Id.* at 659–60.

246 *Id.* at 659; *see also* discussion *supra* Part II.A.1.

247 *See* discussion *supra* Part II.A.3.

248 *Id.*; *see also* discussion *supra* Part II.A.2.

249 441 F.3d 977 (Fed. Cir. 2006).

250 *Id.* at 987 (citing *In re* Oetiker, 977 F.2d 1443, 1447 (Fed. Cir. 1992)). The court in *In re Kahn* stated that "[The analogous-art] test begins the inquiry into whether a skilled artisan would have been motivated to combine references by defining the prior art relevant for the obviousness determination, and that it is meant to defend against hindsight." *Id.* (citing *In re* Clay, 966 F.2d 656, 659–60 (Fed. Cir. 1992)). To avoid hindsight, "there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *Id.* (citing *In re* Lee, 277 F.3d 1338, 1343–46 (Fed. Cir. 2002)).

251 *Kahn*, 441 F.3d at 980.

thesizers were known in the art."[252] However, the hand-held optical pens were "cumbersome, which machines ma[de] it difficult for a blind user to study complex publications."[253] In order to resolve this problem, Kahn invented "a device that [was] operated by eye control and sound localization such that it [could] read out loud the word 'looked at' by the user."[254] By this invention, "[t]he user would then move his or her eyes to 'look' where the next word would be expected to appear."[255]

There were three specific prior art references. First, Anderson 626 disclosed the prior art that was mentioned above.[256]

> Anderson's [sic] patent discusses feed-back which may be visual, auditory or tactile to verify decisions by eye control equipment.
>
> However, such inventions are not suitable for totally blind individuals who are not verifying where they are looking but are using their eyes to direct which part of the artificial page should be read to produce a sound image.[257]

Second, Garwin's patent showed devices available for sensing the situation where an individual is looking were already known.[258] Third, "Stanton disclose[d] an acoustical imaging system for use by visually impaired individuals that uses horizontal and vertical directional sound to represent visual aspects of an environment."[259]

In regards to this "reading machine," the Court explained that:

> [M]otivation to combine was articulated and placed on the record. As to the Anderson/Garwin combination, the Board identified the desire to free up the hands of the Anderson user as the problem confronted and found that Garwin itself evidenced the broad applicability of its optical controls to the claimed invention.[260]

Further, the Court reported, "[a]s to the addition of Stanton, the Board identified express teachings in Stanton of 'the benefit of acoustic imaging in reading systems' and properly related those teachings to the Anderson/Garwin combination."[261] Then the Court affirmed the Board's decision and concluded

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252 *Id.*

253 *Id.*

254 *Id.*

255 *Id.* at 981.

256 *Id.* at 982.

257 *Id.*

258 *Id.* at 981.

259 *Id.* at 983.

260 *Id.* at 989–90.

261 *Id.* at 990.

that "substantial evidence supports the finding of a motivation to combine the teachings of Stanton to the Anderson/Garwin combination."[262]

When the decision is examined on the grounds of the Japanese standard, it is quite clear that the combination of Stanton to Anderson/Garwin categorizes the judgment into the "suggestion" factor because the Court clearly mentioned "teaching."[263] However, the decision of Anderson/Garwin is difficult to fit into the Japanese standard because the reasoning is unclear whether a "desire to free up the hands" is common and whether "optical control" like the Garwin patent is well-known as a tool to respond to "the desire to free up the hands."[264] Assuming the reasoning is correct, the decision may be categorized into the "common problem" factor according to the Japanese standard.

As illustrated above, there are two interesting points in the comparisons between the Japanese Guidelines and the U.S. cases, regarding aspects of "technical fields," "problems," and "functions." First, according to *Winslow* the field of invention's endeavor seems to include not only the knowledge in a certain industry, but also "general common knowledge" which includes technologies generally known in the relevant technical field, widely known throughout the industry.[265] Second, it is recognized that the aspect of the technical field is applied with some reasoning on how to categorize technical fields from the viewpoint of a problem or function, such as in *Winslow*, *Deminski*, and *Clay*.[266] This is advantageous in reducing the hindsight bias when defining the scope of technical fields. Hindsight bias is further discussed in the next section.

As is illustrated by the above discussion, under the Japanese standard, it is apparent that every decision fits into more than two aspects and many of them fit into three aspects including the category of "probable cause or motivation." This seems to indicate that the courts have defined the scope of analogous art across several different aspects, such as the kind of problem, and/or function.

B. The Nature of the Problem

In *Pro-Mold & Tool Co. Inc., v. Great Lakes Plastics Inc.*,[267] the Federal Circuit heard arguments concerning a patent on sports cardholders.[268] The court

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262 *Id.* at 989.

263 *Id.* at 986; *see also* discussion *supra* Part II.A.2.

264 *Kahn*, 441 F.3d at 989.

265 *In re* Winslow, 365 F.2d 1017, 1020 (C.C.P.A. 1966).

266 *In re* Clay, 966 F.2d 656 (Fed. Cir. 1992); *In re* Deminski, 796 F.2d 436 (Fed. Cir. 1986); *Winslow*, 365 F.2d at 1017.

267 75 F.3d 1568 (Fed. Cir. 1996).

decided that "[t]he Squeeze Tite card holder contains all the elements of the invention except for its size."[269] The Court affirmed the lower court's decision of obviousness, stating "[t]he Classic Line Thin card holder provided this missing element, being only slightly larger than a stored card."[270] The Court held that the reason to combine the prior art "arose from the very nature of the subject matter involved, the size of the card intended to be enclosed."[271] Moreover, the court said, "[t]he suggestion or motivation to combine these features of the prior art was thus evident from the very size of the card itself."[272]

When we examine this decision under the Japanese standard, this judgment is categorized into the "common technical problem" reasoning[273] if it was a common desire to make the cardholder "slightly larger than a stored card."[274] But if the desire stems from the cardholders' aesthetic design or the convenience of carrying the card, we can also categorize this decision into the "workshop modification" reasoning.[275]

Dippin' Dots, Inc. v. Mosey[276] concerned a patent "dealing with a unique ice cream product."[277] The court concluded that "the process practiced at Festival Market combined with any other relevant prior art must render the claims of the '156 patent obvious. Substantial evidence existed for the jury to find the facts necessary to support both conclusions."[278] The court discussed the obviousness as follows:

> The fourth step, "storing" at a very cold temperature for an extended period of time, may not have been present, but extended cold storage was an obvious elaboration on the Festival Market sales in order to distribute and retail the product. The motivation for DDI to make these trivial modifications is readily apparent from the problem to be solved.[279]

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268 *Id.* at 1570.

269 *Id.* at 1572.

270 *Id.*

271 *Id.* at 1573.

272 *Id.*

273 *See* discussion *supra* Part II.A.2.

274 *Pro-Mold*, 75 F.3d at 1571.

275 *See* discussion *supra* Part II.A.1.

276 476 F.3d 1337 (Fed. Cir. 2007).

277 *Id.* at 1339.

278 *Id.* at 1344.

279 *Id.* at 1344–45.

When we examine this decision under the Japanese standard, this judgment is categorized into the "common technical problem"[280] reasoning because the court stated that the problem solved by the fourth step of the invention was an obvious elaboration on the Festival Market sales.[281] The nature of the problem could then be said to be close to the "common problem,"[282] "different problem,"[283] or "workshop modification"[284] reasonings.

IV. HOW TO REDUCE "EFFECTS OF HINDSIGHT ON THE DECISION OF OBVIOUSNESS"

The Federal Circuit attempted to avoid hindsight bias by applying a rigid teaching, suggestion, or motivation test, which forced inventors seeking a patent to show explicit evidence.[285] However, the Supreme Court recognized that "[a] factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning."[286] The Supreme Court stated further that "[r]igid preventative rules that deny factfinders recourse to common sense [to avoid hindsight bias] are neither necessary under our case law nor consistent with it."[287] In the wake of *KSR*, the U.S. patent system needs a new, concrete obviousness standard resistant to hindsight bias that remains faithful to the broad principles articulated by the Court. In this section, we will discuss how to reduce effects of hindsight on obviousness decisions in the U.S. and Japan.[288] The U.S. and Japanese systems provide similar

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280 *See* discussion *supra* Part II.A.2.

281 *Dippin' Dots*, 476 F.3d at 1345.

282 *See, e.g.*, Concrete Appliances Co. v. Gomery, 269 U.S. 177, 184–85 (1925); *Dippin' Dots*, 476 F.3d at 1345; *In re* Kahn, 441 F.3d 977, 990 (Fed. Cir. 2006); Pro-Mold & Tool Co. Inc., v. Great Lakes Plastics, Inc., 75 F.3d 1568, 1573 (Fed. Cir. 1996); *In re* Clay, 966 F.2d 656, 659–60 (Fed. Cir. 1992) (noting common technical problems as a reasoning in obviousness determinations).

283 *See* discussion *supra* Part II.A.2.

284 *Pro-Mold*, 75 F.3d at 1573 (noting modifications of design as a reasoning in obviousness determinations).

285 For example, in *In re Rouffet*, 149 F.3d 1350 (Fed. Cir. 1998), the Federal Circuit said "the suggestion to combine requirement is a safeguard against the use of hindsight combinations to negate patentability." *Id.* at 1359.

286 KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727, 1742 (2007).

287 *Id.* at 1742–43.

288 As was mentioned in previous sections, there are alternative ways to reduce the influence of hindsight including (1) the opportunities to overcome the reasoning of obviousness by showing the advantageous effects of the claimed invention or showing an objection in the prior art to reach the claimed invention, (2) the submission of evidence, (3) the selection of the most

analytical tools for overcoming a showing of obviousness, and both require an evidentiary record to support a finding of obviousness. However, a key difference between the two systems lies in the method for determining the scope of the prior art that may be used for demonstrating obviousness.[289]

A. Opportunities to Overcome the Reasoning of Obviousness

In both the Japanese and U.S. patent systems, prima facie evidence of obviousness can be refuted by similar methods. One such method is citing advantageous effects that result from an otherwise obvious combination.[290] The Japanese obviousness standard is determined through existence of advantageous effects, which serve as proof of nonobviousness of a certain patent.[291] As mentioned above, the Supreme Court and the lower courts mentioned the effects, too, such as in *Adams*.[292] However, while "an 'unexpected result,' like 'synergism,' may be *evidence* of nonobviousness, it is *not* a requirement."[293]

Another method of overcoming an obviousness determination is citing an obstruction in the prior art. According to the Japanese standard, one can overcome the reasoning of obviousness by demonstrating an obstruction to combine the prior arts.[294] This theory is very similar to the theory that was shown in *Adams*:

> Despite the fact that each of the elements of the Adams battery was well known in the prior art, to combine them as did Adams required that a person reasonably skilled in the prior art must ignore that (1) batteries which continued to operate on an open circuit and which heated in normal use were not practical; and (2) water-activated batteries were successful only when combined with electrolytes detrimental to the use of magnesium. These long-accepted factors, when taken together, would, we believe, deter any investigation into such a combination as is used by Adams.[295]

Thus, although the elements of the claims at issue in *Adams* were known in the prior art, the prior art also contained two facts that would have led

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suitable prior art to compare against the claimed invention, and (4) explanations of reasoning related to a technical field.

289 *See* discussion *supra* Part II.C.

290 *See* discussion *supra* Part II.D.

291 *See* id.

292 United States v. Adams, 383 U.S. 39 (1966).

293 Panduit Corp. v. Dennison Mfg. Co., 774 F.2d 1082, 1098 (Fed. Cir. 1985).

294 *See* discussion *supra* Part II.C.

295 *Adams*, 383 U.S. at 51–52.

any would-be inventors away from the particular combination of elements found in *Adams*.[296]

B. Submission of Evidence

Procedural evidentiary requirements also help to avoid hindsight in both the U.S. and Japanese patent systems. As we have seen above, according to the Japanese system, "[w]ell-known or commonly used art should be accompanied with an exemplary document insofar as possible except when it is so well-known that any evidential document seems unnecessary."[297] This is the same as the U.S. system's requirement of "articulated" reasoning.[298] For example, in *Alza* the Federal Circuit said that "there must be *some* articulated reasoning with *some* rational underpinning to support the legal conclusion of obviousness. This requirement is as much rooted in the Administrative Procedure Act [for our review of Board determinations], which ensures due process and non-arbitrary decision making, as it is in § 103."[299]

C. The Selection of the Most Suitable Prior Art

The U.S. and Japanese systems differ most notably in the method of determining the obviousness of a claimed invention. Moreover, this difference may include a way to avoid hindsight.

1. The Japanese Method

In general, nonobviousness is determined by reasoning that a ["person of ordinary skill in the art"] could have easily arrived at a claimed invention based on cited inventions cannot be made by constantly considering what a person skilled in the art would do after precisely comprehending the state of the art in the field to which the present invention pertains at the time of the filing.[300] Concretely, there are 4 steps to determine nonobviousness: 1) defining the scope of the claimed invention and the prior arts; 2) selecting the most suitable prior art for the reasoning; 3) comparing each other and clarifying the distin-

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296 *Id.*

297 JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.8(2).

298 Alza Corp. v. Mylan Labs., Inc., 464 F.3d 1286 (Fed. Cir. 2006).

299 *Id.* at 1291 (quoting *In re* Kahn, 441 F.3d 977, 987–88 (Fed. Cir. 2006)) (modification in original).

300 JAPANESE EXAMINATION GUIDELINES, *supra* note 18, at pt. 2, ch. 2, § 2.4.

guishing feature of a claimed invention; and 4) considering whether a person of ordinary skill in the art creates the "reasoning" on the basis of the contents of a) the selected prior art, b) other cited inventions (including a well-known or commonly used art), and c) the common general knowledge.[301] The reasoning can be made from "various and extensive aspects," which are explained in the following sections.[302]

2. The U.S. Method

The U.S. Supreme Court articulated the basic steps in the nonobviousness inquiry in *Graham* as 1) "the scope and content of the prior art are to be determined;" 2) "differences between the prior art and the claims at issue are to be ascertained; and" 3) "the level of ordinary skill in the pertinent art resolved."[303] "Against this background, the obviousness or nonobviousness of the subject matter is determined."[304]

The Supreme Court and the Federal Circuit have adopted the "problem-solving approach" to determine the state of the art.[305] Moreover, the Federal Circuit mentioned other factors, such as sophistication of the technology, in *Custom Accessories v. Jeffrey-Allan Industries, Inc*:[306]

> Factors that may be considered in determining level of skill include: type of problems encountered in art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field. Not all such factors may be present in every case, and one or more of them may predominate.[307]

3. Comparison and "the Most Suitable Prior Art"

There is an interesting difference in comparing the Japanese steps to the U.S. steps. The Japanese step in "selecting the most suitable prior art" is not explicitly considered in the U.S. steps, while I believe that selection of the most suitable prior art be important in reducing the effects of hindsight. In this proc-

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301 *Id.* at pt. 2, ch. 2, § 2.4(2).

302 *Id.*

303 Graham v. John Deere Co., 383 U.S. 1, 17 (1966).

304 *Id.*

305 CHISUM, *supra* note 54, § 5.03[1][b][iii].

306 807 F.2d 955 (Fed. Cir. 1986).

307 *Id.* at 962–63.

ess, creating the object that is compared against a claimed invention is as vulnerable to hindsight. We will see this point in the chart, in detail.

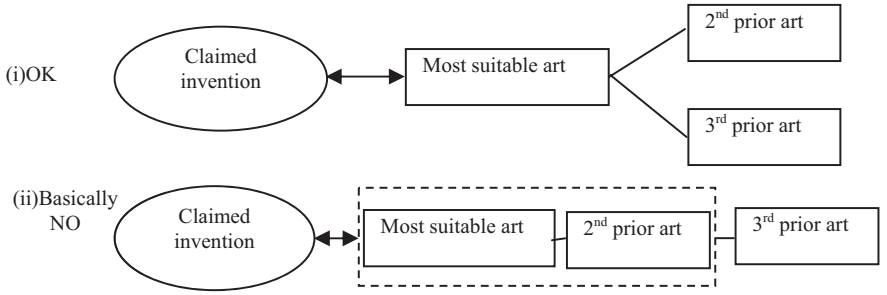

Diagram (i) follows the Japanese steps. As stated earlier, this process creates the most suitable prior art based on information written in one specific reference. Moreover, the Japanese process evaluates the most suitable prior art on the grounds of other prior arts, such as second prior art, third prior art, common knowledge or person of ordinary skill in the art's ordinal creativity.[308]

On the other hand, Diagram (ii) shows that when the object to compare against the claimed invention (dashed square in the diagram) is created by combining the most suitable prior art and a second prior art, the claimed invention would appear less significant because the object could be a better idea than what really existed when the invention was made. In other words, this judgment would occur, primarily, by hindsight. When the difference is indeed slight or common, this might not be a problem. But when the difference is not so small, this might be a problem. We can see this risk in the U.S. case reviewed below.

4. *In re Kahn*

As mentioned above,[309] as to the Anderson/Garwin combination, the Federal Circuit affirmed the Board's finding that "the desire to free up the hands of the Anderson user"[310] was the problem confronted and "Garwin itself evidenced the broad applicability of its optical controls to the claimed invention."[311] Regarding the addition of Stanton, the court also affirmed the Board's holding that the "express teachings in Stanton of 'the benefit of acoustic imaging in reading systems' and properly related those teachings to the Anderson/Garwin

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308 *See* discussion *supra* Part II.A.1.

309 *See* discussion *supra* Part II.A.

310 *In re* Kahn, 441 F.3d 977, 989 (Fed. Cir. 2006).

311 *Id.* at 898–90.

combination."[312] The court concluded that the "substantial evidence supports the finding of a motivation to combine the teachings of Stanton to the Anderson/Garwin combination."[313]

If the remaining differences between the claimed invention and the combination of Anderson's and Garwin's patents is not so small, not as is common to person of ordinary skill in the art, this decision could be vulnerable to hindsight in the process of evaluating the differences.

D. Explanation of Reasoning Related to Technical Field

As noted above,[314] some U.S. cases applied the aspects of a technical field to specific cases with some explanations of how to categorize the technical fields from a viewpoint of a problem or a function.[315] This procedure provides information to reduce hindsight bias and gives patent applicants and patent holders opportunities to overcome the reasoning. Therefore, defining the scope of the technical field can reduce hindsight bias.

V. CONCLUSION

In *KSR* the Supreme Court noted that "[t]hroughout this Court's engagement with the question of obviousness, our cases have set forth an expansive and flexible approach inconsistent with the way the [Federal Circuit] appealed its [teaching, suggestion, or motivation] test."[316] After this decision, courts and scholars must interpret the meaning of phrases such as "the field of endeavor," "analogous," or "the nature of problems" which are too general to prove determinative. Therefore, this article attempts to clarify these meanings and prove ways to avoid hindsight by comparing the Japanese obviousness rules and the U.S. obviousness rules. By this comparison, three issues have emerged.

First, the U.S. cases in the Supreme Court and Federal Circuit saw obviousness from several aspects, which the Article compares to the Japanese Guidelines. Essentially, the Japanese Guidelines categorize several aspects related to the ordinary creativity, which might be helpful to define creativity in the U.S.

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312 *Id.* at 990.

313 *Id.* at 989.

314 *See* discussion *supra* Part II.A.

315 *In re* Clay, 966 F.2d 656, 659 (Fed. Cir. 1992); *In re* Deminski, 796 F.2d 436, 443 (Fed. Cir. 1986); *In re* Winslow, 365 F.2d 1017, 1021–22 (C.C.P.A. 1966).

316 KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727, 1739 (2007).

Second, the Japanese rules have more factors to create the state of the art than the U.S. rules, especially in the aspect of a "function" which can be found in some Supreme Court decisions. This also serves as an example of "ordinary creativity," an idea found in several Supreme Court decisions but generally neglected by the Federal Circuit.

Third, there are some alternatives to reduce hindsight, such as opportunities to overcome the reasoning of obviousness by discussing the advantageous effects, obstructions in the prior art, the submission of evidence, and the selection of the most suitable prior art other than the teaching, suggestion, or motivation test.

By these comparisons, it becomes clear that the Japanese obviousness standards could be used to interpret the U.S. obviousness standard. Moreover, these standards include several ways to reduce influences of hindsight bias, some of which are in the U.S. system already. Therefore, American practitioners might find rationale in the Japanese standards to settle the confusing situation after *KSR*.