

ANOTHER MISSED OPPORTUNITY: THE SUPREME COURT'S  
FAILURE TO DEFINE NONOBVIOUSNESS OR COMBAT  
HINDSIGHT BIAS IN *KSR V. TELEFLEX*

by  
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*This Article analyzes two significant errors of omission in the Supreme Court's recent patent decision, KSR v. Teleflex. First, though KSR represents the Court's eighth decision on nonobviousness since the standard was enacted in 1952, the Court still has never defined what this core patent standard requires. The failure to instruct on the level of ingenuity necessary to satisfy nonobviousness leads to inconsistent and unpredictable non-obvious decisions. Second, despite recognizing the problem of hindsight bias in nonobviousness analysis and the importance of ameliorating this bias to achieve accurate non-obvious decisions, the Supreme Court not only failed to take the hindsight problem seriously in KSR, but actually appeared to misconstrue the problem. As a result, nonobviousness decisions will continue to be systematically biased with respect to the legal inquiry required by section 103. This is a symposium article based on a presentation given at Nonobviousness—The Shape of Things to Come, a 2007 Lewis & Clark Law School Business Law Forum.*

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I. INTRODUCTION

The Supreme Court's 2007 *KSR International Co. v. Teleflex Inc.*<sup>1</sup> opinion represents the Court's eighth nonobviousness decision in the fifty-five years since the non-obvious requirement was statutorily enacted.

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<sup>1</sup> 127 S. Ct. 1727 (2007).

Though the non-obvious standard is venerated as the “ultimate condition of patentability”<sup>2</sup> and the “heart of the patent law,”<sup>3</sup> the Court still has not defined what the standard actually requires. Attention has been focused almost exclusively on the factual underpinnings that help inform non-obvious analysis. This focus has blinded many from the lapse that the quantum of ingenuity necessary to satisfy the non-obvious requirement has never been elaborated. The failure to instruct on the legal question of nonobviousness means that non-obvious decisions will remain inconsistent and unpredictable. No one can know for sure whether an invention which incorporates a change over prior technology, whether seemingly slight or apparently elaborate, is obvious or not under the Section 103 standard.

The *KSR v. Teleflex* decision reveals a second significant flaw in non-obvious doctrine as well. Despite recognizing the problem of hindsight bias in nonobviousness analysis, and consequently the importance of ameliorating the bias to achieve accurate non-obvious decisions, the Court not only failed to take the hindsight problem seriously in *KSR*, but actually appeared to misconstrue the problem in the first instance. The Court seems to have forgotten its understanding of the hindsight problem correctly identified decades earlier in *Graham v. John Deere Co.*<sup>4</sup> Once a decision-maker knows what the invention is, the invention inevitably appears more obvious than it actually was at the time it was made. Consequently, the conditions under which non-obvious analysis is conducted systematically biases non-obvious decisions with respect to the doctrinally accurate inquiry. This cognitive bias can detrimentally affect the incentives provided by the patent system.

## II. THE UNDEFINED NON-OBVIOUS REQUIREMENT

The core requirement for obtaining a patent is that the invention was not obvious at the time it was made.<sup>5</sup> An inventor does not receive a patent for a merely new and useful invention, but only for an invention that measures a significant technological advance over prior art. It is the non-obvious standard that commonly presents the greatest hurdle to

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<sup>2</sup> NONOBVIOUSNESS—THE ULTIMATE CONDITION OF PATENTABILITY (John F. Witherspoon ed., 1980).

<sup>3</sup> FED. TRADE COMM’N, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY, ch. 4, at 2 (2003), available at <http://www.ftc.gov/os/2003/10/innovationrpt.pdf>.

<sup>4</sup> 383 U.S. 1 (1966).

<sup>5</sup> DONALD CHISUM, CHISUM ON PATENTS § 5.02[6] (2007); NONOBVIOUSNESS—THE ULTIMATE CONDITION OF PATENTABILITY, *supra* note 2; Judge Giles S. Rich, *Laying the Ghost of the “Invention” Requirement*, 1 APLA Q. J. 24, 26 (1972). In order to receive a patent, an invention must also satisfy subject matter, utility, novelty, and adequate disclosure validity requirements. 35 U.S.C. §§ 101–02, 112 (2000). Portions of this Part are based on Gregory N. Mandel, *The Non-Obvious Problem: How the Indeterminate Non-Obvious Standard Produces Excessive Patent Grants*, \_\_ U. C. DAVIS L. REV. \_\_ (2008).

obtaining a patent and it is this requirement that protects society against the social costs both of denying a deserving patent and of granting an undeserving monopoly.<sup>6</sup> Improper application of the non-obvious standard would either result in inefficiently low incentives to innovate (reducing technological innovation) or allow the patenting of trivial advances, leading to patent thickets and other inefficiencies, and similarly reducing future technological advancement.<sup>7</sup> The importance of the non-obvious requirement is demonstrated by the reality of patent litigation—the non-obvious requirement is both the most commonly litigated patent validity issue and the patent validity requirement most likely to result in a patent being held invalid.<sup>8</sup> The non-obvious requirement thus stands at the center of innovation policy and the technology economy in the United States.

The non-obvious requirement in Section 103 of the Patent Act provides that a patent may not be obtained on an invention

if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.<sup>9</sup>

Section 103 thus requires determining whether the differences presented by an invention meet or exceed the quantum of innovation necessary to satisfy the non-obvious standard.<sup>10</sup>

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<sup>6</sup> *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 146 (1989) (the non-obvious standard provides “a careful balance between the need to promote innovation and the recognition that imitation and refinement through imitation are both necessary to invention itself and the very lifeblood of a competitive economy.”); *Graham*, 383 U.S. at 6 (“Innovation, advancement, and things which add to the sum of useful knowledge are inherent requisites in a patent system which by constitutional command must ‘promote the Progress of . . . useful Arts.’ This is the *standard* expressed in the Constitution and it may not be ignored.”)

<sup>7</sup> FED. TRADE COMM’N, *supra* note 3, at 6–7; Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 VA. L. REV. 1575, 1577, 1586 (2003); ROBERT PATRICK MERGES & JOHN FITZGERALD DUFFY, *PATENT LAW AND POLICY: CASES AND MATERIALS* 646–47 (3d ed. 2002).

<sup>8</sup> John R. Allison & Mark A. Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 AIPLA Q. J. 185, 208–09 (1998); *see also* GLORIA K. KOENIG, *PATENT INVALIDITY: A STATISTICAL AND SUBSTANTIVE ANALYSIS*, 2 INTELLECTUAL PROPERTY SERIES 5-50 (rev. ed. 1980) (finding that obviousness was the most common basis for judicial invalidation of patents for the period 1953–1978); P.J. Federico, *Adjudicated Patents, 1948–54*, 38 J. PAT. OFF. SOC’Y 233, 249 (1956) (finding that obviousness was the most common basis for judicial invalidation of patents for the period studied).

<sup>9</sup> 35 U.S.C. § 103(a) (2000). The patent reform bills currently pending in Congress do not materially affect the issues discussed here. *See* Patent Reform Act of 2007, H.R. 1908, 110th Cong. (1st Sess. 2007); Patent Reform Act of 2007, S. 1145, 110th Cong. (1st Sess. 2007).

<sup>10</sup> *See* Christopher Cotropia, *Nonobviousness as an Exercise in Gap Measuring*, in *INTELLECTUAL PROPERTY AND INFORMATION WEALTH: ISSUES AND PRACTICES IN THE DIGITAL AGE*, 2 *PATENTS AND TRADE SECRETS* 21, 25–26 (Peter K. Yu ed., 2007)

It is well settled that nonobviousness is a mixed question of fact and law.<sup>11</sup> The factual part of the inquiry, as the Supreme Court explained forty years ago, concerns the prior art, the differences between the invention and the prior art, the level of skill in the art, and other considerations.<sup>12</sup> The legal part of the inquiry concerns whether the differences between the invention and the prior art are substantial enough that they would have been obvious to one of ordinary skill in the art.<sup>13</sup> The Supreme Court opinions on nonobviousness have focused on only two parts of these inquiries. The opinions have either developed the jurisprudence of the factual portion of the inquiry or they have stated a conclusion on the legal side of the inquiry (some opinions do both). None of the opinions have developed the jurisprudence of the legal portion of the non-obvious inquiry. Despite issuing eight opinions on the nonobviousness requirement, the Court has provided almost no guidance concerning either the degree of ingenuity necessary to meet the Section 103 non-obvious standard or how a decision-maker is supposed to evaluate whether the differences between the invention and the prior art meet this degree. Neither does Federal Circuit doctrine fill this gap.

A. *The Trilogy*

Supreme Court nonobviousness precedent commences with *Graham v. John Deere Co.*,<sup>14</sup> and its companion cases, *Calmar v. Cook Chemical*<sup>15</sup> and *United States v. Adams*,<sup>16</sup> referred to in patent circles collectively as “the Trilogy.” The Trilogy represents the Supreme Court’s first interpretation of the statutory non-obvious requirement.<sup>17</sup>

The principal issue in the Trilogy was establishing the level of ingenuity necessary to satisfy the Section 103 non-obvious requirement, which had been added to the Patent Act in 1952. The Supreme Court explained that the question in each case was “what effect the 1952 Act had upon traditional statutory and judicial tests of patentability and what definitive tests are now required.”<sup>18</sup> The Court concluded that the Section 103 standard “was intended to codify judicial precedents . . . [and

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(discussing the difference between the invention and the prior art as a gap representing the degree of technological progress produced by the invention).

<sup>11</sup> *Graham*, 383 U.S. at 17.

<sup>12</sup> *Id.*

<sup>13</sup> *Id.* at 3.

<sup>14</sup> 383 U.S. 1 (1966).

<sup>15</sup> *Id.*

<sup>16</sup> 383 U.S. 39 (1966).

<sup>17</sup> *Graham*, 383 U.S. at 3.

<sup>18</sup> *Id.*

that] the general level of innovation necessary to sustain patentability remains the same.”<sup>19</sup>

The predicament created by the Court’s conclusion that Section 103 simply codified the earlier judicially created requirement of “invention” is that not only was the level of ingenuity necessary to satisfy the prior standard not well defined, but it was heavy criticism of the amorphousness of the invention standard (and a perception that it was being applied too stringently) that led Congress to enact Section 103 in the first instance.<sup>20</sup> As the *Graham* Court itself noted,

[T]his Court has observed [that] the truth is the word ‘invention’ cannot be defined in such manner as to afford any substantial aid in determining whether a particular device involves an exercise of the inventive faculty or not. Its use as a label brought about a large variety of opinions as to its meaning both in the Patent Office, in the courts, and at the bar.<sup>21</sup>

The House and Senate Reports on Section 103 identified the same problem, critiquing that the judicial invention requirement “has been expressed in a large variety of ways.”<sup>22</sup> Judge Learned Hand famously referred to the invention standard as being “as fugitive, impalpable, wayward, and vague a phantom as exists in the whole paraphernalia of legal concepts.”<sup>23</sup>

Congress expressly added Section 103 to the Patent Act in an attempt to provide “uniformity and definiteness” to the patentability inquiry, so as to “have a stabilizing effect and minimize great departures which have appeared in some cases.”<sup>24</sup> It was recognized that the terminology of Section 103 on its own was insufficient to accomplish these goals, but was expected that the new standard would provide a basis for the development of guidelines to achieve the desired definiteness.

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<sup>19</sup> *Id.* at 3–4. One of the primary drafters of Section 103 disputed the Supreme Court’s conclusion, explaining that Section 103 was not intended to codify the patentability precedent, but to replace it. Rich, *supra* note 5, at 36. The Senate and House Reports added that, “Section 103 . . . provides a condition which exists in the law and has existed for more than 100 years.” S. REP. NO. 82-1979, at 6 (1952); H.R. REP. NO. 82-1923, at 7 (1952).

<sup>20</sup> Joseph Miller, *Nonobviousness: Looking Back and Looking Ahead*, in INTELLECTUAL PROPERTY AND INFORMATION WEALTH: ISSUES AND PRACTICES IN THE DIGITAL AGE, 2 PATENTS AND TRADE SECRETS 1, 7–8 (Peter K. Yu ed., 2007); George M. Sirilla, 35 *U.S.C. § 103: From Hotchkiss to Hand to Rich, the Obvious Patent Law Hall-of-Famers*, 32 J. MARSHALL L. REV. 437, 501–26 (1999) (delineating the events leading to the enactment of Section 103 and its eventual application to replace the “invention” standard); Rich, *supra* note 5, at 32–33 (explaining that Section 103 was added to counteract a judicial drift hostile to patents).

<sup>21</sup> *Graham*, 383 U.S. at 11–12 (citing *McClain v. Ortmyer*, 141 U.S. 419, 427 (1891)) (internal quotations and citations omitted).

<sup>22</sup> S. REP. NO. 82-1979, at 6; H.R. REP. NO. 82-1923, at 7.

<sup>23</sup> *Harries v. Air King Products Co.*, 183 F.2d 158, 162 (2nd Cir. 1950).

<sup>24</sup> S. REP. NO. 82-1979, at 6; H.R. REP. NO. 82-1923, at 7; *Graham*, 383 U.S. at 15, 17.

The Senate Report on Section 103 noted, “This paragraph is added with the view that an explicit statement in the statute may have some stabilizing effect, and also to serve as a basis for the addition at a later time of some criteria which may be worked out.”<sup>25</sup> The Supreme Court’s opinion in *Graham*, equating the Section 103 non-obvious standard to require the same degree of ingenuity as the former “judicial tests of patentability,” failed to develop these criteria and failed to provide the desired uniformity and definiteness.

*Graham* established the method for determining the nonobviousness of an invention in two succinct sentences:

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.<sup>26</sup>

The scope and content of the prior art, the differences between the prior art and the invention, and the level of ordinary skill in the art are the factual inquiries which underlay the non-obvious issue.<sup>27</sup> The Court noted that another factual inquiry, “secondary considerations [such] 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.”<sup>28</sup> Whether an invention is non-obvious in light of these factual considerations is the ultimate legal question.<sup>29</sup>

The opinion in *Graham* provided no direction concerning how to evaluate the ultimate legal question of obviousness, beyond the teaching that it depends on the identified underlying factual considerations.<sup>30</sup> Identifying the differences between the patent claims at issue and the prior art is one question; determining the amount of inventiveness a person of ordinary skill in the art would need to bridge these differences, and whether such an amount meets the non-obvious threshold, are

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<sup>25</sup> S. REP. NO. 82-1979, at 18.

<sup>26</sup> *Graham*, 383 U.S. at 17.

<sup>27</sup> *Sakraida v. Ag Pro, Inc.*, 425 U.S. 273, 280 (1976); *Id.* at 17.

<sup>28</sup> *Graham*, 383 U.S. at 17–18. The Federal Circuit has subsequently held that it is “error to exclude [secondary consideration] evidence from consideration.” *Stratoflex, Inc. v. Aeroquip, Corp.*, 713 F.2d 1530, 1539 (Fed. Cir. 1983).

<sup>29</sup> *Sakraida*, 425 U.S. at 280; *Graham*, 383 U.S. at 17.

<sup>30</sup> FED. TRADE COMM’N, *supra* note 3, at 9 (“Although the Court lists the key elements, it does not tell how to apply them,” citing testimony of Professor John Duffy, “these primary factors . . . sort of leave you off at the very point you think the analysis should start.”); Miller, *supra* note 20, at 9 (“the Court did *not* indicate . . . *how* one was to go about determining obviousness (or not)”; Cotropia, *supra* note 10, at 26 (noting the Court in *Graham* failed to identify when the differences between the invention and prior art was great enough to meet the non-obvious standard); John Duffy, *Inventing Invention: A Case Study of Legal Innovation*, at 41, available at <http://www.utexas.edu/law/conferences/ip/DuffyPaper.pdf>.

separate issues. There is no guidance in *Graham* as to the quantum of innovation necessary to satisfy the non-obvious standard, or as to how a decision-maker is supposed to measure this quantum.

The patent at issue in *Graham* was for a spring clamp for a plow which allowed the plow shank to be pushed upward when it hit rocks or other obstructions in the soil, preventing damage to the plow.<sup>31</sup> The patent at issue in *Calmar* was for an improvement to finger-operated pump sprayers that redesigned the spray cap sealing arrangement so that the sprayers could be shipped with their caps in place without leaking.<sup>32</sup> The Court issued a single opinion for both cases.

The Supreme Court's application of its new non-obvious framework to the facts in *Graham* and *Calmar* likely exacerbated the problems created by the lack of a definitional basis for the non-obvious standard. In *Graham*, the Court engaged in a detailed analysis, based on the record, of the relevant prior art and the differences between the prior art and the claims at issue.<sup>33</sup> The Court did not, however, engage in any analysis of the level of ordinary skill in the art of plow shanks. As a practical matter, the basis for this lapse is evident: there was no record on the level of ordinary skill because it was the *Graham* decision itself that clarified this requirement as part of the obviousness inquiry. The appropriate action to take in this circumstance would have been to remand the case for factual determinations on the level of ordinary skill in the art.<sup>34</sup> The Court, however, simply omitted its own newly established requirement, and jumped to a legal conclusion that, "[c]ertainly a person having ordinary skill in the prior art . . . would immediately see that the thing to do was what Graham did," and held the invention obvious.<sup>35</sup> The Court's error is underscored by its reference to "ordinary skill in the *prior art*" rather than "ordinary skill in the art," confusing the references against which the differences are judged with the hypothetical person of ordinary skill who serves as the basis for determining nonobviousness.

The Court made a similar mistake in *Calmar*. Again, the decision offers a detailed description of the prior art and the differences between the claims at issue and the prior art.<sup>36</sup> The opinion, however, provides no discussion of the level of ordinary skill in the art. In fact, the only reference to this part of the non-obvious requirement is a conclusory

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<sup>31</sup> *Graham*, 383 U.S. at 19–21.

<sup>32</sup> *Id.* at 26–27.

<sup>33</sup> *Id.* at 19–24.

<sup>34</sup> See, e.g., *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242 (1986) (clarifying standard of proof and remanding for factual determination of whether the standard was met); *Santosky v. Kramer*, 455 U.S. 745 (1982) (holding that a greater standard of proof was necessary in an action to sever parents' rights in their child, and then remanding for a factual determination on the satisfaction of the new standard).

<sup>35</sup> *Graham*, 383 U.S. at 25.

<sup>36</sup> *Id.* at 30–36.

parroting of the statutory language in the concluding sentence of the *Calmar* portion of the opinion.<sup>37</sup>

Unlike *Graham* and *Calmar*, *Adams* contains some analysis relevant to the person of ordinary skill, but remains deficient in defining the level of ingenuity necessary to satisfy the non-obvious requirement. The patent at issue in *Adams* concerned the first “practical, water-activated, constant potential battery which could be fabricated and stored indefinitely without any fluid in its cells.”<sup>38</sup> The Court again engaged in a lengthy discussion of the prior art and differences between the invention and the prior art.<sup>39</sup> Here, however, the Court went on to discuss the relevance of the level of ordinary skill in the art to the nonobviousness analysis:

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.<sup>40</sup>

Rather than further analyzing the level of ordinary skill in the art, however, the Court simply concluded, “These long-accepted factors, when taken together, would, we believe, deter any investigation into such a combination as is used by Adams.”<sup>41</sup> The Court provides some basis for this conclusion, noting evidence that several experts expressed disbelief in Adams’ invention and that the Patent Office did not find any references to cite against the Adams application.<sup>42</sup>

In each of the Trilogy cases, the Supreme Court effectively substituted its own judgment about whether an invention was obvious for the requisite judgment of the person of ordinary skill.<sup>43</sup> The failure of the Court to apply its own requirements muddied the important difference between the factual and legal elements of the nonobviousness analysis. Though these inquiries are related, they are distinct. The blending of the level of ordinary skill factual question and ultimate non-obvious legal

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<sup>37</sup> *Id.* at 37 (“We conclude that the claims at issue in the [relevant] patent must fall as not meeting the test of § 103, since the differences between them and the pertinent prior art would have been obvious to a person reasonably skilled in that art.”).

<sup>38</sup> *United States v. Adams*, 383 U.S. 39, 43 (1966).

<sup>39</sup> *Id.* at 45–48, 51–52.

<sup>40</sup> *Id.* at 51–52.

<sup>41</sup> *Id.* at 52.

<sup>42</sup> *Id.*

<sup>43</sup> Rebecca S. Eisenberg, *Obvious to Whom? Evaluating Inventions From the Perspective of PHOSITA*, 19 BERKELEY TECH. L.J. 885, 888, 898 (2004); Joseph P. Meara, *Just Who is the Person Having Ordinary Skill in the Art? Patent Law’s Mysterious Personage*, 77 WASH. L. REV. 267, 274 (2002).



question has obscured the problem that the non-obvious standard remains undefined.

*B. Middle Period Non-Obvious Decisions*

The Supreme Court has decided five nonobviousness cases since the Trilogy, four between 1969 and 1986, and *KSR v. Teleflex* last term. None of these cases has resolved the problem of the lack of a standard for judging nonobviousness.

*Anderson's-Black Rock, Inc. v. Pavement Salvage Co.* concerned a patent on a method of laying asphalt to form better joints between strips of pavement.<sup>44</sup> As asphalt is laid in strips, the first strip cools before the next adjacent strip is laid, resulting in a poor "cold joint." The patented subject matter involved placing a radiant-heat burner on the side of an asphalt paver to heat the edge of the first cool strip just before laying the adjacent strip, resulting in a better joint.<sup>45</sup> Both radiant burners for asphalt and asphalt pavers existed in the prior art.<sup>46</sup>

The case turned on whether the combination of existing elements satisfied the non-obvious standard. The patent owner supported the nonobviousness of his invention at trial with the testimony of two individuals knowledgeable in the field of asphalt paving, who had expressed their doubts to the inventor that radiant heat would solve the problem of cold joints.<sup>47</sup> The Supreme Court, however, noted in its opinion that radiant heat was known in the art and that there was uncontested evidence that the two elements did not have to be combined in the same machine to work (that is, they could work as independent machines operated in tandem).<sup>48</sup> That is the extent of the Court's analysis pertinent to the quantum of ingenuity necessary to satisfy the non-obvious requirement. The Court concludes "that to those skilled in the art the use of the old elements in combination was not an invention by the obvious-nonobvious standard."<sup>49</sup>

*Dann v. Johnston* involved a patent on a computerized system for tracking various categories of bank checks.<sup>50</sup> The non-obvious analysis involved two prior art references, and though the decision is not entirely clear as to whether the invention is held obvious in light of each independently or both together, the opinion does contain some discussion of the level of ordinary skill in the art: "it is important to remember that [obviousness] is measured not in terms of what would be obvious to a layman, but rather . . . to one reasonably skilled in the

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<sup>44</sup> 396 U.S. 57 (1969).

<sup>45</sup> *Id.*

<sup>46</sup> *Id.* at 58.

<sup>47</sup> *Id.* at 59.

<sup>48</sup> *Id.* at 60.

<sup>49</sup> *Id.* at 62–63.

<sup>50</sup> 425 U.S. 219 (1976).

applicable art.”<sup>51</sup> The Court concludes in this case that “it can be assumed that such a hypothetical person would have been aware” of the relevant references, and, “[a]ssuming such an awareness, [the invention] would, we think, have been obvious to one reasonably skilled in the applicable art.”<sup>52</sup> This conclusion reveals similar procedural and doctrinal flaws to those identified earlier. Despite identifying the appropriate inquiry, the Court still substituted its own judgment for the person of ordinary skill. The analysis concludes, “[t]he gap between the prior art and [the invention] is simply not so great as to render the system nonobvious to one reasonable skilled in the art.”<sup>53</sup> How great would be great enough? The opinion does not say.

The third case from this period, *Sakraida v. Ag Pro, Inc.* involved a patent on a water flushing system to remove cow manure from a dairy barn floor.<sup>54</sup> Like the patents at issue in *Anderson’s-Black Rock* and *Johnston*, the patent here covered an invention that combined multiple elements, each of which existed in the prior art. The claimed innovative feature was the abrupt release of water onto the barn floor, washing animal waste into drains without the need for supplemental manual labor.<sup>55</sup> Somewhat remarkably, the Court did not even mention the “level of ordinary skill” in its analysis. The Court instead simply concluded that the combination of old elements, which did not produce synergistic results, was “the work of a skilful mechanic, not that of the inventor.”<sup>56</sup> There was no other consideration of whether the combination would have been obvious to a person of ordinary skill.<sup>57</sup>

The final non-obvious decision of this period was a brief *per curiam* opinion in *Dennison Manufacturing Co. v. Panduit Corp.*<sup>58</sup> The Supreme Court granted certiorari in *Dennison* after the Federal Circuit reversed a District Court holding of patent invalidity for obviousness. The Supreme Court concluded that the Federal Circuit opinion failed to explain how or whether the Circuit had applied appropriate deference to the factual portion of the District Court’s non-obvious opinion.<sup>59</sup> The Court vacated the Circuit’s opinion and remanded the case for further consideration in

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<sup>51</sup> *Id.* at 229 (internal quotations omitted) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 37 (1966)).

<sup>52</sup> *Id.* at 229 (internal quotations omitted).

<sup>53</sup> *Id.* at 230.

<sup>54</sup> 425 U.S. 273, 274 (1976).

<sup>55</sup> *Id.* at 277.

<sup>56</sup> *Id.* at 282 (quoting *Hotchkiss v. Greenwood*, 52 U.S. (11 How.) 248, 267 (1851)).

<sup>57</sup> The Supreme Court’s failure to adequately analyze nonobviousness, and to present essentially conclusory holdings concerning whether an invention was non-obvious, did not start with the Section 103 cases. Cases decided under the earlier invention standard also present this problem. *See, e.g.*, *Washburn & Moen Mfg. Co. v. Beat ‘Em All Barbed-Wire Co.*, 143 U.S. 275 (1892).

<sup>58</sup> 475 U.S. 809 (1986).

<sup>59</sup> *Id.* at 811.

light of Federal Rule of Civil Procedure 52(a), requiring that findings of fact not be set aside unless clearly erroneous.<sup>60</sup> On remand, the Circuit simply held that its conclusion on obviousness had been one of law.<sup>61</sup> The Circuit cited the Supreme Court's own opinion in *Graham*, which the Circuit noted, "disagreed with conclusions reached below, did not remand, described no finding as 'clearly erroneous,' and did not mention Rule 52(a)."<sup>62</sup>

### C. *KSR v. Teleflex*

The Supreme Court's most recent non-obvious decision is *KSR International Co. v. Teleflex, Inc.*<sup>63</sup> The patent at issue combined an adjustable pedal assembly with an electronic throttle control for automobiles. Adjustable pedals allow people of different heights to drive a car comfortably; electronic throttles provide for electronic, rather than mechanical, operation of the accelerator. Once again, all elements existed in the prior art, and the issue was whether it was obvious to combine them. The case centered on Federal Circuit doctrine under which a fact-finder was required to identify some "teaching, suggestion, or motivation" for making a combination in the prior art in order to conclude that it was obvious to combine existing references (referred to as the "TSM" test).<sup>64</sup> Such a teaching, suggestion, or motivation could be found in the nature of the problem to be solved, the teachings in the prior art, or the ordinary skill of one in the art.<sup>65</sup>

The Supreme Court rejected rigid application of the TSM test, particularly to the extent it focused only on prior publications or the explicit content of issued patents.<sup>66</sup> The Court, however, acknowledged the value of the TSM inquiry, to the extent implicit suggestions could satisfy the test, and concluded that the fact-finder must "determine whether there was an apparent reason to combine the known elements in the fashion claimed."<sup>67</sup>

The Supreme Court's description of the TSM requirement in *KSR* is actually doctrinally inaccurate. The Court states that "under [the Federal Circuit's TSM test] a patent claim is only proved obvious if some motivation or suggestion to combine the prior art teachings can be found in the prior art, the nature of the problem, or the knowledge of a person having ordinary skill in the art."<sup>68</sup> What the Court should have stated is

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<sup>60</sup> *Id.*

<sup>61</sup> *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561 (Fed. Cir. 1987).

<sup>62</sup> *Id.* at 1567.

<sup>63</sup> 127 S. Ct. 1727 (2007).

<sup>64</sup> *In re Dembiczak*, 175 F.3d 994 (Fed. Cir. 1999); *In re Rouffet*, 149 F.3d 1350 (Fed. Cir. 1998).

<sup>65</sup> *In re Kahn*, 441 F.3d 977, 987 (2006); *In re Rouffet*, 149 F.3d at 1357.

<sup>66</sup> *KSR*, 127 S. Ct. at 1741.

<sup>67</sup> *Id.*

<sup>68</sup> *Id.* at 1734 (internal quotations omitted).

that, under TSM, it can only be proven that it was obvious to *combine* certain prior references if some motivation or suggestion to combine is identified.<sup>69</sup> The difference is that even if no suggestion to combine is identified, it is still possible that patent claims are obvious in light of prior art that did not contain every element contained in the claims.

Consider a patent claim consisting of elements *A*, *B*, *C* and *D*, each of which exist in the prior art. The Supreme Court (and the TSM test) focus on whether there is a pre-existing suggestion to combine all elements. What the Supreme Court's inaccurate restatement misses is that even if it was obvious to combine only elements *A*, *B*, and *C* (but not *D*), the full combination *A-B-C-D* may also be obvious if the level of ingenuity necessary to make this advance over *A-B-C* was less than that required by Section 103. Stated another way, imagine that element *D* did not exist in the prior art; *A-B-C-D* might still be obvious in light of *A-B-C*, if it represents only an obvious advance.

Though this distinction is somewhat nuanced, it again reveals an inappropriate commingling of the factual and legal portions of the non-obvious inquiry. Whether there was a reason (Supreme Court) or TSM (Federal Circuit) to combine certain references is a question of fact; whether the claims were obvious in light of the prior art is a distinct question of law. Although the Court did not recognize it as such, the Court's discomfort with the TSM requirement was likely related to the problem identified in this Article—TSM, particularly rigid application of TSM, ignores the ingenuity gap.

In *KSR*, the Supreme Court did engage in substantially more discussion concerning the role of the person having ordinary skill in the art than in prior non-obvious decisions. Most significantly, the Court explained that “[a] person of ordinary skill is also a person of ordinary creativity, not an automaton.”<sup>70</sup> This statement highlights that an invention which represents a certain quantum of advance over prior art can still be obvious. The Court reaffirmed this point in the conclusion to the opinion, noting that “ordinary innovation [is] not the subject of exclusive rights under the patent laws.”<sup>71</sup>

The Court also clarified that the fact that a particular combination of elements might have been obvious to try to a person having ordinary skill in the art could indicate that the combination was obvious. A person of ordinary skill, for instance, may have reason to pursue known options to meet a design need or market pressure.<sup>72</sup> If pursuing these known options succeeds, it may be the result of ordinary skill in the art, and not a non-obvious advance.<sup>73</sup> Not surprisingly, the Court's analysis of the level

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<sup>69</sup> See *In re Kahn*, 441 F.3d at 986 (stating the TSM test in this manner); *In re Dembiczak*, 175 F.3d at 999 (same); *In re Rouffet*, 149 F.3d at 1355–56 (same).

<sup>70</sup> *KSR*, 127 S. Ct. at 1742.

<sup>71</sup> *Id.* at 1746.

<sup>72</sup> *Id.* at 1742.

<sup>73</sup> *Id.*

of ordinary skill in the art and how the person of ordinary skill would have approached the invention in *KSR* is significantly more concrete than in the earlier non-obvious cases.<sup>74</sup>

In *KSR*, the Court also engages in its most significant discussion of the legal non-obvious inquiry. It does so, however, only with respect to evaluating whether it was obvious to combine certain elements, not with respect to the ultimate question of evaluating the level of advance over prior art or identifying the quantum of advance necessary to achieve nonobviousness. In the context of combining prior art, the Court explains the need to consider market demand, design incentives, and other market forces that might lead to combinations or variations of prior art, or that a technique used with one product may be expected to be used with another.<sup>75</sup> The Court also clarifies that obviousness must be judged based on the claims and the prior art generally, not only on the particular solution to the particular problem that the patentee was working on.<sup>76</sup> Though these statements impart some insight relevant to measuring nonobviousness, they do not provide a reliable yardstick for the quantum of ingenuity necessary.

The Supreme Court's greater focus on the person of ordinary skill and his or her abilities is laudatory. In the end, however, the Court strikes the TSM notion of nonobviousness, but does not develop a new standard to replace it. Without identifying the quantum of ingenuity necessary to satisfy the non-obvious requirement or a method for measuring an invention against this standard in some manner, non-obvious jurisprudence remains significantly underdeveloped.

#### D. *The Federal Circuit*

The Federal Circuit, the federal appeals court with jurisdiction over most patent appeals, had provided some direction concerning the level of ingenuity necessary to satisfy the non-obvious standard in certain cases, but even this limited guidance was curtailed by the Supreme Court in *KSR v. Teleflex*. Under a line of cases, the Federal Circuit had established that an invention was not obvious simply because it may have been "obvious to try," but that inventions are only obvious if a person of ordinary skill would have had a reasonable expectation of success in achieving them.<sup>77</sup> As discussed, the Supreme Court limited the "obvious to try" doctrine in *KSR*.<sup>78</sup> Though some vestige of the rule may remain, it

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<sup>74</sup> *Id.* at 1742–43. This analysis, no doubt, was helped by the District Court's significant findings on the level of ordinary skill in the art. *Id.*

<sup>75</sup> *Id.* at 1740.

<sup>76</sup> *Id.* at 1741–42.

<sup>77</sup> *Brown & Williamson Tobacco Corp. v. Phillip Morris, Inc.*, 229 F.3d 1120, 1124–25 (Fed. Cir. 2000) (quoting *In re O'Farrell*, 853 F.2d 894, 904 (Fed. Cir. 1988) ("For obviousness under § 103, all that is required is a reasonable expectation of success")) *Id.*

<sup>78</sup> *KSR*, 127 S. Ct. at 1742.

cannot provide meaningful definition of what is obvious or not in most cases.

Similarly, the Federal Circuit's TSM requirement at issue in *KSR* provided some instruction concerning the legal standard of nonobviousness in certain cases. References that lacked a teaching, suggestion, or motivation to combine in the prior art could not be considered obvious to combine.<sup>79</sup> The holding in *KSR*, however, overruled any hard-line rule in favor of an "expansive and flexible approach."<sup>80</sup>

In sum, Supreme Court and Federal Circuit precedent do not define, or provide significant meaning for, the legal non-obvious standard. The courts have failed to develop the criteria expected by Congress to implement the section 103 non-obvious requirement, and have not achieved the goal identified in *Graham* of creating a "more practical test of patentability" to provide the "uniformity and definiteness which Congress called for in the 1952 Act."<sup>81</sup> There remains no significant guidance on the measure of the non-obvious threshold or on how a decision-maker is supposed to evaluate the ultimate legal nonobviousness question.

### III. THE HINDSIGHT BIAS IN NON-OBVIOUS DECISIONS

Section 103 requires that nonobviousness be judged based on whether the invention "would have been obvious at the time [it] was made."<sup>82</sup> Nonobviousness determinations thus should turn on whether the invention was non-obvious in the *ex ante* world just prior to the invention's achievement, when the invention and how to make it were still unknown. A proper non-obvious decision must not take into account the *ex post* fact that the invention actually was achieved.

Unfortunately, this mandate is far easier stated than accomplished. Humans are cognitively unable to prevent knowledge gained through hindsight (here, that the invention was achieved) from impacting their

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<sup>79</sup> *Karsten Mfg. Corp. v. Cleveland Golf Co.*, 242 F.3d 1376, 1385 (Fed. Cir. 2002) (reversing a finding of obviousness on multiple patent claims due to lack of evidence of teaching, suggestion, or motivation to combine necessary references in the prior art); *C.R. Bard, Inc. v. M3 Systems, Inc.*, 157 F.3d 1340 (Fed. Cir. 1998) (same); *Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931 (Fed. Cir. 1990) (affirming district court's finding of nonobviousness where prior art did not contain a teaching, suggestion, or motivation to combine references including all elements of patentee's invention). This is not to say that the Supreme Court was wrong to revise either of these doctrines, but only that doing so removed guidance concerning nonobviousness.

<sup>80</sup> *KSR*, 127 S. Ct. at 1739.

<sup>81</sup> *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966).

<sup>82</sup> 35 U.S.C. § 103(a) (2000).

analysis of past events, as required for the proper non-obvious analysis.<sup>83</sup> This is the hindsight problem. Once the decision-maker knows that the invention was achieved—and even more prejudicially, how it was achieved—the invention inevitably appears to have been more obvious than it actually was.

The hindsight effect is familiar to all—consider the widespread adages “hindsight is 20/20” or “Monday morning quarterback.” These sayings are based on a well-recognized fact: once outcome information is known, people are cognitively incapable of preventing that information from influencing their understanding of past events. As a result, individuals consistently (and unconsciously) exaggerate what could have been anticipated in foresight and not only tend to view what occurred as having been inevitable, but also as having appeared relatively inevitable beforehand.<sup>84</sup> The hindsight bias has been confirmed in over one hundred experimental studies, including studies in both laboratory and applied settings, and involving both lay and expert judgment in a wide variety of fields.<sup>85</sup>

#### A. *The Hindsight Bias in Patent Law*

Experimental studies reveal that decision-makers suffer a significant hindsight bias when judging nonobviousness in patent law.<sup>86</sup> These studies were based on mock jurors who were given hypothetical fact scenarios concerning certain inventions. The scenarios were based on facts surrounding actual issued patents that had been challenged on non-obvious grounds in litigation and were the subject of reported decisions. The scenarios included background information about the field of art of the particular invention, a variety of prior art reference information, a description of the problem that a person cast in the role of the inventor was working on, and a questionnaire. A between-subjects design was used. There were two different conditions in the basic mode. The foresight (or

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<sup>83</sup> Baruch Fischhoff, *For Those Condemned to Study the Past: Heuristics and Biases in Hindsight*, in JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES 335 (Daniel Kahneman et al. eds., 1982).

<sup>84</sup> *Id.* at 341.

<sup>85</sup> See, e.g., Susan J. LaBine & Gary LaBine, *Determinations of Negligence and the Hindsight Bias*, 20 LAW & HUM. BEHAV. 501, 502–04 (1996) (surveying a wide variety of hindsight bias studies); Kim A. Kamin & Jeffery J. Rachlinski, *Ex Post ≠ Ex Ante: Determining Liability in Hindsight*, 19 LAW & HUM. BEHAV. 89, 90–91 (1995) (citing studies revealing hindsight bias in surgeons' appraisal of surgical cases, physicians' medical diagnoses, women's reactions to pregnancy tests, voters' election predictions, and nurses' employee evaluations); Jay J. Christensen-Szalanski & Cynthia Fobian Willham, *The Hindsight Bias: A Meta-Analysis*, 48 ORGANIZATIONAL BEHAV. & HUM. DECISION PROCESSES 147 (1991) (meta-analysis of over 120 hindsight bias studies).

<sup>86</sup> Gregory Mandel, *Patently Non-Obvious II: Experimental Study on the Hindsight Issue Before the Supreme Court in KSR v. Teleflex*, 9 YALE J.L. & TECH. 1, 15–25 (2007); Gregory Mandel, *Patently Non-Obvious: Empirical Demonstration that the Hindsight Bias Renders Patent Decisions Irrational*, 67 OHIO ST. L.J. 1391, 1409–20 (2006).

control) condition included all of the lead-up information identified above and ended with the scenario character trying to solve the identified problem. The hindsight condition was identical to the foresight condition except that it had one additional sentence at its end which stated that the character had come up with a solution, and stated what the solution was.<sup>87</sup>

The studies revealed striking results. In one scenario, only 34% of participants in the foresight condition considered the invention obvious, while 73% of participants in the hindsight condition thought that the invention was obvious.<sup>88</sup> In a second scenario involving the same invention, but with different background information, 49% of foresight participants versus 85% of hindsight participants thought the invention was obvious.<sup>89</sup> In a third scenario involving a separate invention, 23% of foresight participants and 59% of hindsight participants thought that the invention was obvious.<sup>90</sup> Each of the three scenarios revealed a hindsight effect of 36% to 39%, a magnitude greater than that reported for other legal judgments.<sup>91</sup>

Although the effect of the hindsight bias in patent law was more severe and pervasive than expected, its existence was not surprising. Courts and commentators had suspected a hindsight problem in patent law for some time. Over a century ago, the Supreme Court identified a concern about judging combination inventions in hindsight: “Now that [the invention] has succeeded, it may seem very plain to any one that he could have done it as well.”<sup>92</sup> Similarly, in *Graham*, the Court explicitly warned against “slipping into use of hindsight” in non-obvious determinations.<sup>93</sup> The Federal Circuit has likewise recognized that resolving the hindsight problem is critical to proper non-obvious decisions.<sup>94</sup>

The non-obvious hindsight studies also examined the effect of the jurisprudential methods that the Supreme Court and the Federal Circuit have developed in an effort to combat the hindsight problem. These methods include jury instruction warning jurors about the hindsight bias

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<sup>87</sup> Mandel, *Patently Non-Obvious II*, *supra* note 86, at 11–15; Mandel, *Patently Non-Obvious*, *supra* note 86, at 1406–09.

<sup>88</sup> Mandel, *Patently Non-Obvious II*, *supra* note 86, at 15–16; Mandel, *Patently Non-Obvious*, *supra* note 86, at 1409. The percentages stated in the text are arrived at by combining the results of the two identical studies.

<sup>89</sup> Mandel, *Patently Non-Obvious II*, *supra* note 86, at 16.

<sup>90</sup> Mandel, *Patently Non-Obvious*, *supra* note 86, at 1409. Each result was statistically significant at the  $p < .001$  level. Mandel, *Patently Non-Obvious II*, *supra* note 86, at 16; Mandel, *Patently Non-Obvious*, *supra* note 86, at 1409.

<sup>91</sup> Mandel, *Patently Non-Obvious*, *supra* note 86, at 1411.

<sup>92</sup> *Loom Co. v. Higgins*, 105 U.S. 580, 591 (1882).

<sup>93</sup> *Graham v. John Deere Co.*, 383 U.S. 1, 36 (1966) (quoting *Monroe Auto Equipment Co. v. Heckethorn Mfg. & Sup. Co.*, 332 F.2d 406, 412 (1964)).

<sup>94</sup> See, e.g., *In re Dembiczak*, 175 F.3d 994 (Fed. Cir. 1999); *In re Rouffet*, 149 F.3d 1350 (Fed. Cir. 1998).



and instructing them to avoid it, the use of secondary consideration evidence to establish nonobviousness, and the Federal Circuit's pre-*KSR* TSM requirement.<sup>95</sup> The studies also examined the impact of the Supreme Court's *Graham* framework on the hindsight bias. The Supreme Court did not propose the *Graham* framework as a solution to the hindsight problem per se, but the Court was acutely aware of the hindsight problem when it drafted its decision in *Graham*,<sup>96</sup> and critics of TSM in the *KSR* litigation contended that TSM was unnecessary because the *Graham* framework adequately ameliorated the hindsight bias.<sup>97</sup>

The effect of jury instruction was tested though a condition in which mock jurors were explicitly warned about the hindsight bias and instructed to guard against it in a manner based on Model Patent Jury Instructions.<sup>98</sup> The instructed jurors did not display a statistically lower hindsight bias than jurors who received no instruction.<sup>99</sup> The impact of secondary consideration evidence was studied through examination of eighteen months of reported Federal Circuit and District Court nonobviousness decisions. The analysis revealed that, based on how infrequently secondary consideration evidence is both available and reliable, "[s]econdary consideration evidence appears to affect only a small percentage of non-obvious decisions," an impact far too low to mitigate the hindsight bias.<sup>100</sup> Separate scenario conditions also tested the effects of the Federal Circuit's TSM requirement and the Supreme Court's *Graham* framework. The studies revealed that neither doctrine reduced the hindsight bias in non-obvious decisions.<sup>101</sup>

The hindsight effect revealed in these experiments creates substantial complications for patent law. Judges, jurors, and patent examiners will routinely view inventions that were actually non-obvious at the time of invention as instead having been obvious.

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<sup>95</sup> Mandel, *Patently Non-Obvious II*, *supra* note 86, at 13–17; Mandel, *Patently Non-Obvious*, *supra* note 86, at 1408–10. The presumption of validity that adheres to issued patents, *see* 35 U.S.C. § 282 (2000), is sometimes identified as a potential remedy to the hindsight problem, but such a contention is inappropriate. Mandel, *Patently Non-Obvious*, *supra* note 86, at 1437–38.

<sup>96</sup> 383 U.S. at 36.

<sup>97</sup> Brief for the United States as Amicus Curiae in Support of Petitioner, *KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007) (No. 04-1350), 2006 WL 1455388 at 10, 16, 21; Brief of Twenty-Four Intellectual Property Law Professors as Amici Curiae in Support of Petitioner, *KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007) (No. 04-1350), 2005 WL 1334163 at 9; Brief of Cisco Systems Inc., Microsoft Corp., Hallmark Cards Inc., V.F. Corp., and Fortune Brands Inc. as Amici Curiae in Support of Petitioner, *KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007) (No. 04-1350), 2005 WL 1503650 at 3.

<sup>98</sup> Mandel, *Patently Non-Obvious*, *supra* note 86, at 1408.

<sup>99</sup> *Id.* at 1409–10.

<sup>100</sup> *Id.* at 1421–25.

<sup>101</sup> Mandel, *Patently Non-Obvious II*, *supra* note 86, at 16–17.

B. *The Hindsight Bias in KSR v. Teleflex*

A remarkable aspect of the Supreme Court's decision in *KSR v. Teleflex* is that, despite the fact that the doctrine at issue was based on the hindsight bias, the Court's opinion barely even acknowledges the hindsight problem. The Federal Circuit had developed the TSM requirement to combat the hindsight bias, a fact one would be hard-pressed to decipher from the *KSR* opinion itself.<sup>102</sup>

The rationale behind TSM was relatively straightforward. Due to the hindsight bias, decision-makers will be excessively prone to believe that it was obvious to combine various elements in the prior art in order to achieve a given invention.<sup>103</sup> As a result, nearly every invention will appear obvious as the decision-maker picks and chooses the various elements of the invention from the available prior art.<sup>104</sup> TSM was implemented in an effort to provide a more objective check concerning whether it actually was obvious to combine certain references *ex ante*, versus whether it only appeared obvious to combine the references in hindsight.<sup>105</sup>

The challenge to the TSM requirement in *KSR v. Teleflex* was also relatively straightforward. The petitioners and other critics of TSM argued that TSM improperly lowered the non-obvious standard by causing inventions for which there was no suggestion to combine references in the prior art to be held non-obvious, even though certain of these inventions actually were obvious.<sup>106</sup> Simply because combining

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<sup>102</sup> *Alza Corp. v. Mylan Labs., Inc.*, 464 F.3d 1286, 1290 (Fed. Cir. 2006); *In re Kahn*, 441 F.3d 977, 986 (Fed. Cir. 2006); *In re Dembiczak*, 175 F.3d 994, 999 (Fed. Cir. 1999); *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 665 (Fed. Cir. 2000); *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998).

<sup>103</sup> *See, e.g., In re Dembiczak*, 175 F.3d at 999; *In re Rouffet*, 149 F.3d at 1357.

<sup>104</sup> *See, e.g., Ruiz v. A.B. Chance Co.*, 357 F.3d 1270 (Fed. Cir. 2004); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132 (Fed. Cir. 1985).

<sup>105</sup> *Alza Corp.*, 464 F.3d at 1290; *In re Kahn*, 441 F.3d at 986; *In re Dembiczak*, 175 F.3d at 999; *Ruiz*, 234 F.3d at 665; *In re Rouffet*, 149 F.3d at 1357.

<sup>106</sup> Brief for Petitioner, *KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007) (No. 04-1350), 2006 WL 2515631; FED. TRADE COMM'N, *supra* note 3, at 12–15 (arguing that the TSM test is sometimes applied too rigidly in a manner that reads the person having ordinary skill in the art out of the non-obvious requirement, and fails to take into account the judgment, experience, and common sense of a person of ordinary skill); NAT'L RESEARCH COUNCIL, *A PATENT SYSTEM FOR THE 21ST CENTURY* (Stephen A. Merrill et al. eds., 2004) (explaining that scientists and engineers may not publish obvious information); Brief for the United States as Amicus Curiae *supra* note 97, at 11–12 (arguing that the TSM test permits obvious inventions to receive patent grants); Brief of Twenty-Four Intellectual Property Law Professors as Amici Curiae, *supra* note 97, at 9 (arguing that it may be obvious to a person of ordinary skill in the art to combine references even where there is no suggestion to do so documented in the prior art); Eisenberg, *supra* note 43, at 888, 897 (arguing that persons of ordinary skill apply skills, judgment, intuition, and tacit knowledge that “defy explicit articulation”); Arti K. Rai, *Allocating Power over Fact-Finding in the Patent System*, 19 BERKELEY TECH. L.J. 907, 912, 917 (2004) (stating that scientists and engineers may not publish obvious information); John R. Thomas, *Formalism at the Federal Circuit*, 52 AM. U. L. REV. 771, 802 (2003) (contending that the TSM test reduces the persons

references was not suggested by a prior teaching, suggestion, or motivation, these arguments reasoned, does not necessarily mean that it was not obvious to combine the references.<sup>107</sup>

Despite the central role of the hindsight bias to the TSM requirement, the Supreme Court's opinion in *KSR* largely ignores the problem. The Court's discussion of the hindsight problem is relegated to a single paragraph buried in a twenty-page opinion.<sup>108</sup> Considering the wealth of data and analysis on the hindsight bias, including the Court's own recognition of the import of the issue previously, this oversight is remarkable. Unsurprisingly, the Court's failure to seriously consider the hindsight problem leaves non-obvious decisions following *KSR* still compromised by the bias.

This is not to say that the Court's decision to reject "rigid" application of TSM was incorrect.<sup>109</sup> As discussed, the non-obvious studies identified above revealed that TSM failed to ameliorate the hindsight bias, at least for simple technology inventions. Although it is possible that TSM was beneficial for combating hindsight bias concerning complex technology inventions,<sup>110</sup> such an effect has not been tested. However, simply because a rigid TSM may not have been an appropriate solution does not make the hindsight problem go away.

The Court's failure to combat the hindsight problem likely occurred, at least in part, because the Supreme Court appeared to misunderstand the hindsight bias in the first instance. In its brief analysis of the hindsight problem in *KSR*, the Court stated that a "factfinder should be aware, of course, of the distortion caused by the hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning."<sup>111</sup> The hindsight bias, however, does not refer to *ex post* reasoning, but to the effect that knowledge of the invention itself has on one's cognitive ability to judge whether it was obvious when it was achieved. There is a significant difference between an after-the-fact argument based on knowledge about how an invention could have been achieved and the unconscious and inevitable distortive effect that the hindsight bias has on an individual's ability to accurately perceive the prior state of technology.

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having ordinary skill construct to requiring "specific, step-by-step" combinations in the prior art).

<sup>107</sup> Petition for Writ of Certiorari, *KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007) (No. 04-1350), 2006 WL 3257150; FED. TRADE COMM'N, *supra* note 3, ch. 4, at 12-15; NAT'L RESEARCH COUNCIL, *supra* note 106, at 90; Brief of Twenty-Four Intellectual Property Law Professors as Amici Curiae, *supra* note 106; Eisenberg, *supra* note 43, at 888; Rai, *supra* note 106, at 912-17.

<sup>108</sup> *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1742-43 (2007).

<sup>109</sup> *Id.* at 1746.

<sup>110</sup> Brief of Business and Law Professors as Amici Curiae in Support of the Respondents, *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007) (No. 04-1350) 2006 WL 2983165, at 20-25.

<sup>111</sup> 127 S. Ct. at 1742.

Further, the hindsight bias studies reveal that factfinders cannot avoid the hindsight bias merely by being made aware of it or by being warned to avoid it.<sup>112</sup> Despite great societal advances in the understanding of cognitive heuristics and biases, the opinion in *KSR* appears to display less of a comprehension of the hindsight problem than the Supreme Court's opinion forty years earlier in *Graham v. John Deere Co.*,<sup>113</sup> and possibly less than the opinion over one hundred years ago in *Loom v. Higgins*.<sup>114</sup> The hindsight problem remains unresolved after *KSR* and will continue to add inconsistency and unpredictability to nonobviousness decisions.

#### IV. CONCLUSION

The problems created by an undefined non-obvious standard that is subject to hindsight bias ripple throughout the patent system. The result of this indeterminacy is that Patent Office examiners cannot accurately judge nonobviousness and federal courts cannot predictably decide non-obvious cases. Inventors are left in a state of uncertainty, not knowing whether to apply for patents on certain inventions or whether to litigate infringement of their patents. Potential infringers also face ambiguity, not knowing whether they need to spend significant resources to design around certain patents or whether to settle allegations of infringement. Investors and potential licensors cannot accurately value patents.

All of these effects impact potential innovators' incentives to innovate and distort decisions about how much and where to direct scarce innovation resources. Being able to correctly determine whether an invention is non-obvious is, in the words of the Supreme Court, "essential to promote progress, because it enables efficient investment in innovation."<sup>115</sup> Uncertainty in the non-obvious standard upsets "the delicate balance the law attempts to maintain between inventors, who rely on the promise of the law to bring the invention forth, and the public, which should be encouraged to pursue innovations, creations, and new ideas beyond the inventor's exclusive rights."<sup>116</sup>

Defining the level of innovation necessary to satisfy the non-obvious requirement and mitigating the hindsight bias are complex problems. Ignoring these problems, however, as is the effective result of *KSR v. Teleflex*, does not make them go away.

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<sup>112</sup> Mandel, *Patently Non-Obvious*, *supra* note 86, at 1409–10.

<sup>113</sup> 383 U.S. 1 (1966).

<sup>114</sup> 105 U.S. 580, 591 (1882).

<sup>115</sup> *See Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 730–31 (2002).

<sup>116</sup> *Id.* at 730 (citing *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 150 (1989)).