NO PATENT FOR YOU!: HOW KSR V. TELEFLEX’S NONOBVIOUSNESS TEST CONFLICTS WITH THE SCIENTIFIC METHOD AND REMOVES THE INCENTIVE TO INNOVATE

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I. INTRODUCTION

Many everyday conveniences that most Americans take for granted were accidental discoveries. In 1928, Sir Alexander Fleming inadvertently discovered the antibiotic properties of penicillin when a species of Penicillium mold contaminated an agar plate full of bacteria in his laboratory.1 Shortly after the end of World War II, Raytheon engineer Percy Spencer stumbled upon the idea for microwave ovens after a chocolate bar melted in his pocket while he was standing next to a large magnetron that

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had powered Allied radar during the War. Unlike the serendipitous discoveries of penicillin and microwave ovens, the vast majority of scientific innovation leading to patentable inventions occurs slowly and methodically. At the heart of this process is the scientific method, which involves predicting an outcome based on known methods and using controlled testing to determine whether the prediction holds true.

The goal of the United States patent law system is to promote the progress of technology by encouraging and rewarding innovation. This goal is reflected in the United States Constitution, which gives Congress the power “[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.” From its inception, the Intellectual Property Clause endeavored to strike a balance between promoting innovation for the benefit of the public while avoiding unnecessary monopolies that restrain competition. In order to receive the reward of a patent monopoly, modern patent law requires that an invention be new, useful, and nonobvious. An invention that is an obvious combination of known elements from the prior art is not deserving of patent protection.

While many patent lawyers consider the nonobviousness inquiry to be the most important patentability requirement, a practical and objective nonobviousness standard remains elusive. In 2007, the Supreme Court decision in KSR International Co. v. Teleflex Inc. upended almost twenty-five years of nonobviousness case law from the Court of Appeals for the Federal Circuit. Perhaps most unsettling about the KSR decision is the statement that inventions created “according to known methods . . . [that] yield predictable results” are unpatentable. This statement is particularly troubling because science progresses by predicting a result and applying known methods to test the prediction.

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2 J. Carlton Gallawa, A Brief History of the Microwave Oven, SOUTHWEST MUSEUM OF ENGINEERING, COMMUNICATION AND COMPUTATION, http://www.smecc.org/microwave_oven.htm (last visited May 2, 2010). Magnetrons are the source of microwave rays. Id.
3 U.S. CONST. art. I, § 8, cl. 8 (the “Intellectual Property Clause”). Although it may seem counterintuitive, the term “science” in the Intellectual Property Clause actually refers to creative matter that is the subject of copyright law, while the phrase “useful arts” refers to the subject matter of patent law.
6 See id. § 103(a).
9 Id. at 416.
The Supreme Court decision in *KSR* is inconsistent with the scientific method. Because the decision embraces a policy that will prevent, not promote, the progress of science, the decision is in direct opposition to the constitutional mandate of the Intellectual Property Clause. This Comment explores the effect of the *KSR* decision on the patent system, specifically focusing on the opinion’s tension with the scientific method. Section II briefly discusses the history of the scientific method and explores the origin and evolution of the nonobviousness requirement. Section III argues that some of the wording of the *KSR* opinion conflicts with the underlying basis of the scientific method and that the opinion fails to address the significant problem of hindsight bias. Finally, Section IV concludes that the *KSR* decision has left the nonobviousness inquiry in an uncertain state that will cause problems for the patent system in the years to come.10

II. BACKGROUND

To appreciate the significance of the *KSR* decision, it is important to first understand the history of both the scientific method and the patent system. Part A discusses the history of the scientific method and its modern formulation. Part B discusses the origin of patent law and addresses the history and evolution of the nonobviousness requirement. Part C explores the creation of the Court of Appeals for the Federal Circuit and its impact on patent law. Part D provides a full analysis of the *KSR* decision. Finally, Part E discusses some of the immediate effects of *KSR* on the patent system.

A. A Brief History of the Scientific Method

“If I have seen farther, it is by standing on the shoulders of giants.” ~ Sir Isaac Newton11

Newton’s humble quote succinctly summarizes the basic concept of the scientific method: science progresses slowly by carefully observing natural phenomena and building upon what is already known. The modern scientific method traces its origins to the teachings of several ancient Greek philosophers, including Pythagoras, Socrates, Plato, and Aristotle (582-322 B.C.).12 Plato and Pythagoras introduced and refined the idea of the hypothesis, while Aristotle introduced the use of logic, reasoning, and

10 The scope of this Comment is limited to identifying and discussing the problem created by *KSR*’s potential conflict with the scientific method. Any suggestions of solutions to this problem are left for a later time.

11 ROBERT K. MERTON, ON THE SHOULDERS OF GIANTS: A SHANDIAN POSTSCRIPT 1 (1965). This quote is almost universally attributed to Newton, but, ironically, it is a variation of a much older adage. Id. at 2-3, 32-33. One of the earliest written records of the quote comes from Bernard of Chartres, who died in 1126, some 500 years before Newton’s use of the saying. Id. at 37, 40.

observation to the study of natural phenomena.\textsuperscript{13} The ancient philosophers believed that knowledge was derived from observation and that the truthfulness of a fact could be demonstrated by showing how it was derived from what was “already known and understood . . . .”\textsuperscript{14}

In the thirteenth century, Roger Bacon was among the first to recognize the importance of controlled and systematic experimentation for the testing of hypotheses.\textsuperscript{15} In the late sixteenth to early seventeenth century, Sir Francis Bacon laid the groundwork for the structure and theory of the modern scientific method.\textsuperscript{16} He introduced and solidified the idea that investigation and understanding come from a series of “gradual inductions” that lead to the formation of a hypothesis.\textsuperscript{17} Although many of Sir Francis Bacon’s theories have been rejected as too simplistic, his idea that progress comes from a “gradual passage from concrete facts to broader and broader generalizations” still guides scientific theory and progress today.\textsuperscript{18}

Science has been defined in modern times as “truth arrived at by observation, experiment, [and] induction.”\textsuperscript{19} Contemporary scientists fundamentally believe that the world can be understood, and although ideas are constantly evolving and emerging, much of the underlying scientific knowledge remains unchanged once it has been established.\textsuperscript{20} These basic beliefs are apparent in the steps of the modern scientific method:

a. Based upon observation, the scientist comes up with a testable question.

b. The scientist then performs background research to see what has already been done and what theories and evidence already exist.

c. Based on this research, the scientist forms an educated hypothesis that predicts a result for what will occur in subsequent experiments.

\textsuperscript{13} Id. at 15, 19-21; Ralph M. Blake et al., Theories of Scientific Method: The Renaissance through the Nineteenth Century 22 (Edward H. Madden ed., 1960).
\textsuperscript{15} Fowler, supra note 12, at 35-36.
\textsuperscript{16} Blake et al., supra note 13, at 52-53.
\textsuperscript{17} Id. at 53-54.
\textsuperscript{18} Id. at 69.
d. The scientist then applies known controlled methods to test the hypothesis.

e. The scientist draws conclusions based upon the results of the experiments and refines the hypothesis, building upon the experimental results to arrive at an answer for the original question.21

The scientific method is a fundamental tool for any technology.22 While scientists in different fields may use different techniques, “the process of formulating and testing hypotheses” to predict a particular outcome is “one of the core activities of scientists,” and “[t]o be useful, a hypothesis should suggest what evidence would support it and what evidence would refute it.”23 In other words, science progresses by testing educated predictions using known methods. With that brief introduction to the scientific method, the history of the nonobviousness requirement in patent law and the KSR decision may now be considered in context.

B. The Patent Law System and the Nonobviousness Requirement

While the concept of protection for new inventions dates back to at least 400 B.C.,24 the American patent system traces its origins to English law.25 Starting around the sixteenth century, the English kings and queens began using patents to grant manufacturing monopolies as a reward to inventors of useful new products and processes.26 Many patents were properly granted as a reward for innovation, but the English royalty quickly began to use (and abuse) monopoly grants as a way to reward political support, creating a long-lasting hostility toward patent monopolies.27 Despite its significant faults, the British patent system arguably helped to power the Industrial Revolution, and “it seems no coincidence that the patent system matured alongside the early industrial technologies.”28

Prior to the American Revolution, the American colonies largely followed the English patent system.29 After the Revolution, the American

21 See Fowler, supra note 12, at 94; Hudson, supra note 19, at 933.
22 Hudson, supra note 19, at 935.
23 American Ass’n for the Advancement of Science, supra note 20, at 26-27.
24 Merges & Duffy, supra note 7, at 1. A fourth century B.C. document reflects a discussion between Aristotle and Hippodamus in which the two Greek philosophers debated the merits of a reward system for citizens who discovered new and useful things. Id.
26 Id. at 1260.
27 Id. at 1264-65.
28 Merges & Duffy, supra note 7, at 6.
patent system experienced a “significant renewal of patenting activity,” during which the individual states began issuing patents. The delegates to the Constitutional Convention decided to include a constitutional grant of power to Congress to issue patent and copyright protection, in part to resolve conflicts between state-issued patents.

However, compared to the other clauses in the United States Constitution, the Intellectual Property Clause has little written history, and it is somewhat of a mystery as to how it came into being. Over half of the delegates to the Convention had some sort of legal training and were more than likely very familiar with the benefits and drawbacks of the English patent system. With the memories of the royal abuse of patents fresh on their minds, the delegates were reluctant to give the new American government the unfettered right to create any sort of monopoly. The Intellectual Property Clause provided a “limited and acceptable” exception to the “general ban on monopolies.” Additionally, the Clause presented a simple and cost-effective way for the federal government to encourage and reward progress and innovation.

The first long-term federal patent statute was the Patent Act of 1793, and many of the basic patentability requirements of modern patent law remain unchanged. Utility and novelty have both been requirements for patentability since the inception of the patent system. However, nonobviousness was a judicially created doctrine that arose later and was not a separate statutory requirement for patentability prior to the current Patent Act of 1952.

1. Early Nonobviousness Cases

The judicially created nonobviousness requirement has evolved considerably over the past 150 years. The 1850 Supreme Court case of Hotchkiss v. Greenwood recognized the concept of obviousness over one hundred years before its codification in the Patent Act of 1952. In Hotchkiss, the Court considered the validity of a patent for a clay
The accused infringer raised the defense that the plaintiff’s product was simply a combination of two previously known elements and, therefore, did not deserve patent protection. The Supreme Court agreed, finding that clay doorknobs and the metal shank used to attach the doorknob were both previously well-known as separate elements. The simple substitution of clay for the usual metal or wood doorknob was nothing more than the work of an “ordinary mechanic acquainted with the business” and lacked the level of “skill and ingenuity” needed to constitute a patentable invention.

Almost one hundred years later, the Supreme Court issued *Cuno Engineering Corp. v. Automatic Devices Corp.* in which it created the infamous “flash of genius” standard. The Court noted that, in order to be patentable, “the new device, however useful it may be, must reveal the flash of creative genius not merely the skill of the calling.” Like *KSR*, *Cuno Engineering* caused great concern at the time among patent lawyers, who were concerned that the Supreme Court had driven the nonobviousness standard so high that no invention would be patentable. Supreme Court Justice Jackson commented in 1949 that “the Court had developed such a ‘strong passion’ for striking down patents under its increasingly stringent invention standard ‘that the only patent that is valid is one which this Court has not been able to get its hands on.’”

Just prior to the enactment of the Patent Act of 1952, the Supreme Court issued *Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp.* The Court recognized the absence of a clear test for patents involving combinations of known elements and also cautioned about the level of care necessary when examining combination patents for the presence of inventiveness. The Court then went on to state that the whole of the combination must “exceed[] the sum of its parts” in order for the invention to be patentable. The Court ultimately held that the invention in

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41 Id. at 249-50.
42 Id. at 254.
43 Id. at 263.
44 Id. at 267.
45 Cuno Eng’g Corp. v. Automatic Devices Corp., 314 U.S. 84, 91 (1941).
46 Id.
48 MERGES & DUFFY, supra note 7, at 629 (quoting Jungersen v. Ostby & Barton Co., 335 U.S. 560, 572 (1949)).
50 Id. at 150-51.
51 Id. at 152. The requirement that a combination of known elements “exceed[] the sum of its parts” became known as the synergistic result requirement. *Id.; see also* Anderson’s-Black Rock, Inc. v. Pavement Salvage Co., 396 U.S. 57, 61 (1969).
question was a combination of elements with “no change in their respective functions,” making it unpatentable.52

2. The Patent Act of 1952 and Subsequent Cases

The Patent Act of 1952 is the current patent statute. The Act codified the judicially created nonobviousness requirement into 35 U.S.C. § 103(a), which states:

A patent may not be obtained . . . 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. Patentability shall not be negatived by the manner in which the invention was made.53

The Congressional Committee Reports for the Patent Act of 1952 stated that patentable subject matter should “include anything under the sun that is made by man,” indicating that Congress intended for the new patent statute to have broad coverage.54 Congress recognized the need for a statutory nonobviousness requirement for inventions that were “new in the sense that the same thing ha[d] not been made before” but were not sufficiently different from the prior art to warrant a patent.55 Congress intended for section 103(a) to provide “uniformity and definiteness” for the nonobviousness inquiry and to “minimize great departures which have appeared in some cases.”56 Section 103(a) was also intended to serve as a basis for the later development of additional criteria by the court system.57

On its face, the language of section 103(a) seemed to be very simple, but the courts have struggled for almost sixty years to define and articulate workable standards for nonobviousness.58 The Supreme Court’s first attempt to articulate a nonobviousness standard came in 1966 with the companion cases of Graham v. John Deere Co.59 and U.S. v. Adams.60 In Graham, the Court conceded that the last sentence of section 103(a) was intended to abolish the “flash of genius” test established in Cuno

52 Great Atl. & Pac. Tea Co., 340 U.S. at 152.
Interestingly, the Supreme Court then concluded that the rest of section 103(a) was simply an unaltered codification of previous judicial precedents regarding the nonobviousness requirement.62

After recognizing that the nonobviousness determination was a “mixed question of fact and law,”63 the Graham Court set out the familiar four-factor test that still guides the factual aspect of nonobviousness inquiries today: (1) “the scope and content of the prior art”; (2) the “differences between the prior art and the claims at issue”; (3) “the level of ordinary skill in the pertinent art”; and (4) the secondary considerations such as “commercial success, long felt but unsolved needs, failure of others, etc.”64

In Adams, the Court recognized the validity of a patent for a combination invention that achieved unexpected results in contradiction to the teachings of the prior art and the opinions of experts.65 The invention in Adams involved a water-activated electrical battery.66 Respected experts expressed doubts as to the battery’s efficacy and practicality,67 and the prior art taught away from the use of plain water as battery fluid.68 However, the water-activated battery proved to be surprisingly functional, practical, and efficient.69 The Supreme Court held that the invention was nonobvious because it had overcome “known disadvantages” that would have “naturally discourage[d] the search for new inventions” using this particular combination of elements.70

Between 1966 and 1982, the Supreme Court issued two more noteworthy decisions regarding nonobviousness.71 In Anderson’s-Black Rock, Inc. v. Pavement Salvage Co.72 and Sakraida v. Ag Pro, Inc.,73 the Supreme Court reemphasized the “synergistic result” requirement from

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61 Graham, 383 U.S. at 15.
62 Id. at 17. The wording chosen by Congress in the Congressional Reports regarding section 103(a) and by the U.S. Supreme Court in the Graham decision is worth noting because of the constitutional issues involved. MERGES & DUFFY, supra note 7, at 660. The Supreme Court’s nonobviousness decisions prior to the enactment of the Patent Act of 1952 were arguably constitutional standards, prompting the Supreme Court and Congress to engage in a “delicate dance” over the years regarding the nonobviousness requirement to avoid the issue of whether Congress was attempting to modify a constitutional interpretation by the Supreme Court. Id.
64 Graham, 383 U.S. at 17. The fourth factor was intended to “give light to the circumstances surrounding the origin of the subject matter sought to be patented,” if needed. Id. at 17-18.
65 Adams, 383 U.S. at 51-52.
66 Id. at 42-43.
67 Id. at 44.
68 Id. at 45-48.
69 Id. at 43-44.
70 Id. at 51-52.
71 Mandel, supra note 63, at 330-31.
Great Atlantic & Pacific Tea Co.⁷⁴ These two cases involved rather unglamorous inventions, both of which were also relatively simple. The invention in Anderson’s-Black Rock was an improved paving machine used to lay asphalt.⁷⁵ Sakraida involved an improvement of a water flush system for removing animal waste from the floors of dairy barns.⁷⁶ In both cases, the inventions involved new combinations of old elements that were well-known in the prior art.⁷⁷ The Court held that the combined elements in both inventions worked in the same fashion as they did individually and did not produce an “effect greater than the sum of the several effects taken separately.”⁷⁸

Despite the Supreme Court’s acknowledgement in Graham that a determination of nonobviousness was a question of law and fact, the Court’s opinions provided very little guidance for the lower courts regarding the legal test for nonobviousness.⁷⁹ The Graham factors regarding the analysis of the prior art and the establishment of the ordinary level of skill in the art constitute the factual aspect of the nonobviousness inquiry.⁸⁰ The court then makes the ultimate legal determination of nonobviousness by analyzing the invention in light of the manner in which a person of ordinary skill would have viewed the cited prior art.⁸¹ The Graham decision contained a detailed analysis of the prior art but nothing on the level of ordinary skill in the art or how to apply the factors for the nonobviousness inquiry.⁸² The Adams decision and the subsequent cases did contain a more thorough discussion of the level of ordinary skill in the art; rather than analyze the invention from the viewpoint of a person of ordinary skill in the art, the Court largely substituted its own judgment regarding nonobviousness in every case.⁸³ Up to this point, the Supreme Court’s nonobviousness decisions had failed to supply the stability and uniformity that Congress envisioned when it enacted section 103(a).⁸⁴

C. Creation of the Court of Appeals for the Federal Circuit

In 1982, Congress created the Court of Appeals for the Federal Circuit (the “Federal Circuit”) and vested it with exclusive jurisdiction over patent appeal cases.⁸⁵ The purpose of the Federal Circuit was to bring
consistency and uniformity to the field of patent law, and it has “taken its role as defender of the patent system seriously.” Prior to the creation of the Federal Circuit, courts strictly construed section 103(a) to regularly invalidate patents for obviousness. However, if the patent did survive the nonobviousness inquiry, the court would interpret the scope of the patent broadly to reach as many infringing products or processes as possible. The Federal Circuit sought to limit the reach of the nonobviousness requirement by finding more patents valid but enforcing them much more narrowly. Prior to KSR, the Supreme Court had not revisited the nonobviousness requirement for over thirty years and seemed content to allow the Federal Circuit to rewrite its case law.

The Federal Circuit quickly distanced itself from the Supreme Court’s nonobviousness decisions in Anderson’s-Black Rock and Sakraida and the synergy requirement. The Federal Circuit announced that it saw no reason to continue the practice of differentiating between the different types of patents by applying a “more stringent standard” to combination patents. In addition to the four factors from Graham, the Federal Circuit developed the teaching, suggestion, or motivation test (the “TSM test”) as an additional framework for determining nonobviousness. The TSM test required a showing of actual evidence that there was some teaching, suggestion, or motivation for a person of ordinary skill in the art to combine the prior art references used to demonstrate obviousness. This evidence could come from a variety of sources, including the “prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved.” “Broad conclusory statements regarding the teaching of multiple references, standing alone, are not ‘evidence.’”

One of the main purposes of the TSM test was to curb the problem of hindsight bias. Because section 103(a) requires the court to step back in time to when the invention was created, the Federal Circuit noted that the nonobviousness inquiry frequently allowed courts to enter the “‘tempting

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86 Trembath, supra note 58, at 36.
88 Id. at 1.
89 Id. at 1-2.
90 Id. at 2.
91 Id. In Dennison Mfg. Co. v. Panduit Corp., 475 U.S. 809, 810-11 (1986), the Supreme Court issued a brief per curiam opinion reversing the Federal Court’s decision on obviousness based on the standard of review applied.
92 Trembath, supra note 58, at 36-37.
93 MERGES & DUFFY, supra note 7, at 663.
94 In re Dembeiczak, 175 F.3d 994, 999 (Fed. Cir. 1999), abrogated in part by, In re Gartside, 203 F.3d 1305 (Fed. Cir. 2000).
95 Id.
96 Id.
97 Id. at 998-99.
but forbidden zone of hindsight."\(^98\) A new invention that is ground-breaking at the time seems obvious with the passage of time and widespread usage.\(^99\) The Federal Circuit noted that "the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis" is to require a showing of an objective reason why a person of ordinary skill in the art would have combined the references.\(^100\)

Further compounding the problem of hindsight, patent applicants are required to fully disclose how to make and use the invention.\(^101\) "Combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor’s disclosure as a blueprint for piecing together the prior art to defeat patentability — the essence of hindsight."\(^102\) The Federal Circuit specifically noted that "less technologically complex inventions" are especially prone to hindsight bias.\(^103\)

D. The KSR International Co. v. Teleflex Inc. Decision

"Technological progress has merely provided us with more efficient means for going backwards." ~ Aldous Huxley\(^104\)

After a relatively inactive period since the creation of the Federal Circuit, the Supreme Court has taken a recent renewed interest in patent law.\(^105\) The result of this renewed interest has often been unfavorable to the rights of patent owners, signaling a return to a system that is hostile to patent protection.\(^106\) Many practicing patent attorneys see these recent Supreme Court decisions weakening a patent owner’s rights as a backlash against some controversial patents that have been granted in recent years.\(^107\) It was no accident that the Supreme Court chose the KSR case to express its displeasure with the Federal Circuit’s TSM test.\(^108\) The case concerned a

\(^{98}\) Id. at 998 (quoting Loctite Corp. v. Ultraseal Ltd., 781 F.2d 861, 873 (Fed. Cir. 1985)).


\(^{100}\) In re Dembiczak, 175 F.3d at 999.


\(^{102}\) In re Dembiczak, 175 F.3d at 999.

\(^{103}\) Id.


\(^{105}\) Timothy B. Dyk, Does the Supreme Court Still Matter?, 57 AM. U. L. REV. 763, 764-65 (2008). Of the twenty patent or patent-related cases heard by the Supreme Court since 1982, eight have been granted certiorari since 2005. Id.

\(^{106}\) Fox, supra note 47.

\(^{107}\) Id. Much of the recent furor over patents has been caused by the Federal Circuit’s decision to grant patents for business methods. See generally Kathryn T. Ng, Comment, Tax Strategy Patents: Close Pandora’s Box on Patenting Criminal Defense Strategies, 34 U. DAYTON L. REV. 253 (2009) (addressing concerns with regard to granting tax strategy patents and subsequent patenting of criminal defense strategies).

classic combination invention with relatively simple technology involving elements that were widely known in the prior art.\footnote{Id.}

1. Background of the Invention and Procedural History

Teleflex’s patent was for an adjustable accelerator pedal assembly for an automobile that incorporated an electronic sensor for communication with the computer chip controlling the throttle in the car’s engine.\footnote{KSR Int’l Co. v. Teleflex Inc., 550 U.S. 398, 410 (2007).} Prior to the 1990s, automobile accelerator pedals physically interacted with the throttle in the engine “via cable or other mechanical link.”\footnote{Id. at 407-08.} The driver pressed on the pedal, the cable pulled open valves in the engine, and the car accelerated.\footnote{Id. at 407.} In the 1970s, designers created adjustable pedals that could accommodate drivers of differing heights by moving the pedal forward or backward in the footwell without changing the amount of force necessary to push the pedal down.\footnote{Id. at 408.} With the advent of computer-controlled throttles, it was no longer necessary to have the physical link between the pedal and the engine, but the car’s computer chip still had to be advised of the pedal’s position.\footnote{Id. at 408-09.} Inventors solved this problem by using electronic sensors with wires connected to the chip.\footnote{Id.} Several prior art patents disclosed several locations for the sensor on a fixed part of the pedal assembly to avoid various problems, such as chafing on the wires connecting the sensor to the computer.\footnote{Id.} The prior art patents separately disclosed each of the elements in Teleflex’s patent, but no single patent contained every single element, implicating section 103(a) and the nonobviousness inquiry.\footnote{Id.}

Teleflex Inc. sued KSR International Co. for infringement of its patent for an adjustable accelerator pedal assembly.\footnote{Id. at 412.} The District Court found the disputed portion of the patent to be obvious in light of the prior art and granted summary judgment in favor of KSR.\footnote{Id.} The District Court found “little difference” between the prior art and Teleflex’s patented pedal assembly.\footnote{Id.} The District Court held that the TSM test had been satisfied by showing that the relevant prior art disclosed all elements of Teleflex’s invention and that the “state of the industry would lead inevitably to combinations of electronic sensors and adjustable pedals . . .”\footnote{Id. at 413.}
In reversing the District Court, the Federal Circuit held that the lower court had incorrectly applied the TSM test. The Federal Circuit found that the District Court failed to make specific findings as to the “understanding or principal within the knowledge of a skilled artisan that would have motivated one with no knowledge of [the] invention” to attach the electronic sensor to the pivot point of this particular adjustable accelerator pedal assembly, rather than to one of the many other fixed attachment points that were available. The Federal Circuit held that there must exist not only a motivation to combine the prior art references but also a motivation to combine them in the “particular manner claimed.” In addition, the cited prior art was designed to solve different problems than those sought to be solved by Teleflex’s patent; therefore, a person having ordinary skill in the art would not necessarily have turned to the teachings of those prior art patents to solve the problem presented.

2. The Supreme Court Opinion

The Supreme Court unanimously reversed the Federal Circuit, finding that Teleflex’s combination of elements from the prior art was obvious. The Court began by condemning the Federal Circuit’s nonobviousness analysis as too rigid. The Court stated that the case law demanded a “broad inquiry” and a “flexible approach” to the nonobviousness inquiry. While expressing disapproval for the Federal Circuit’s application of its TSM test, the Supreme Court did affirm the basic principle underlying the TSM test. In determining whether a combination patent is obvious, the Court noted that it can be helpful to identify the reason why a person of ordinary skill would have been prompted to combine those known elements in the way claimed in the patent. The Court stated that the TSM test is not incompatible with the Graham analysis, so long as the TSM test is not applied too rigidly.

\[\text{References}\]

Id., \textit{Id.} at 413-14, \textit{Teleflex, Inc. v. KSR Int’l Co.}, 119 F. App’x 282, 286 (Fed. Cir. 2005), \textit{KSR}, 550 U.S. at 414. 126 \textit{Id.} at 422, \textit{Id.} at 415. 127 \textit{Id.} at 418-19. 128 \textit{Id.} at 419.
While the Supreme Court did not completely dismiss the TSM test, it provided little additional guidance for the legal aspect of the nonobviousness inquiry and failed to create a clear objective framework for future courts. The Court reiterated a variation of its “synergistic result” requirement from *Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp.*: an invention obtained by combining “familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” The Court also reemphasized the degree of caution necessary in examining a combination patent.

In addition, the Court assigned error to the Federal Circuit’s holding that a patent claim cannot be proven obvious by showing that the combination was “obvious to try.” Where there is a “design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions,” an invention obtained from pursuit of these known solutions is “likely the product not of innovation but of ordinary skill and common sense.” In these situations, the combination may be found obvious under section 103(a) because it was “obvious to try.”

The Court also added that common sense teaches that “familiar items may have obvious uses beyond their primary purposes,” and a “person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle.” A reviewing court should take into consideration “inferences and creative steps that a person of ordinary skill in the art would employ” in assessing the obviousness.

The Supreme Court concluded that Teleflex’s pedal was obvious as a predictable combination of elements from the prior art. One prior art patent taught everything contained in Teleflex’s invention except the sensor placement. Several other prior art patents taught placement of the sensor on a nonmoving part of the pedal assembly, and the “most obvious nonmoving point” on Teleflex’s pedal assembly was the pivot point. In addition, there was a strong market incentive to make the conversion from mechanical to electronic pedals, rendering Teleflex’s patent obvious.

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132 Id. at 401.
133 Id. at 417-18.
134 Id. at 421.
135 Id.
136 Id.
137 Id. at 420.
138 Id. at 418.
139 Id. at 423-24.
140 Id.
141 Id. at 424-25.
142 Id. at 424.
Finally, the KSR decision devoted a single paragraph in its opinion spanning almost twenty pages to addressing the problem of hindsight bias. The Supreme Court held that the Federal Circuit had drawn the “wrong conclusion” from “the risk of courts and patent examiners falling prey to hindsight bias.” The Court stated that “[a] factfinder should be aware, of course, of the distortion caused by hindsight bias” but that common sense should also be applied to the obviousness inquiry.

E. The Aftermath of KSR

The most significant effects of KSR will likely be felt at the entry point into the patent system, which is the patent application. In response to KSR, the United States Patent and Trademark Office (the “USPTO”), has changed its patent examining procedures regarding nonobviousness. The Manual of Patent Examining Procedures (the “MPEP”) now incorporates seven exemplary rationales that may be used to support a rejection for obviousness, several of which come directly from KSR. In addition, USPTO allowance rates for patent applications have been plunging precipitously over the last several years. The allowance rate held steady between 60-70% from the mid-1970s until around 2001, when it began

143 Id. at 421.
144 Id.
145 Id.
146 Fox, supra note 47 (noting that the USPTO now has more options than ever to reject a patent for obviousness).
148 MPEP, § 2141 sec. III. The seven rationales are:
(A) Combining prior art elements according to known methods to yield predictable results;
(B) Simple substitution of one known element for another to obtain predictable results;
(C) Use of [a] known technique to improve similar devices (methods, or products) in the same way;
(D) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;
(E) “Obvious to try” – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;
(F) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art;
(G) Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

falling rapidly to its current rate of approximately 40%.

Coincidentally, one of the most significant drops occurred from 2007-08 when the rate fell almost a full 10%, which is also around the time that the KSR decision was issued.

Moreover, as many patent practitioners feared, recent statistics for the Board of Patent Appeals and Interferences (the “BPAI”) reflect an upward trend since the 2007 KSR decision in favor of affirming section 103(a) obviousness rejections from the USPTO. The BPAI currently affirms approximately 70% of rejections made on obviousness grounds from the USPTO. With so many ways to reject a patent for obviousness, it is not surprising that the statistics would reflect an increase in section 103(a) rejections at both the USPTO and the BPAI.

The Federal Circuit has also changed the way in which it analyzes the nonobviousness requirement in response to KSR. In Leapfrog Enters., Inc. v. Fisher-Price Inc., the first post-KSR nonobviousness decision, the Federal Circuit affirmed the District Court’s finding that the invention was obvious. Leapfrog sued Fisher-Price, alleging that Fisher-Price’s product infringed Leapfrog’s patent. The invention in Leapfrog was an electronic “learning device to help young children read phonetically,” and the cited prior art consisted of two similar learning toys, one electro-mechanical and one completely electrical. In part, Leapfrog argued that the lower court had not presented sufficient evidence regarding the motivation to combine the two prior art patents. While a lack of evidence regarding motivation to combine the prior art patents might have been sufficient prior to KSR, the Federal Circuit held that the use of modern electronics to update mechanical devices was “reasonably obvious to one of ordinary skill” in the art. Interestingly, the Federal Circuit also held that Leapfrog had presented no evidence that the combination of elements was “uniquely challenging or difficult for one of ordinary skill in the art.” These statements, particularly the latter one, indicated a change in the Federal Circuit’s attitude towards the nonobviousness requirement.

150 Id.
151 Id.
152 After a patent application is examined by the USPTO, the applicant may appeal the USPTO’s decision to the Board of Patent Appeals and Interferences.
153 Salazar, supra note 149, at 4.
154 Id.
156 Id.
157 Id. at 1158, 1161.
158 Id. at 1160.
159 Id. at 1161.
160 Id. at 1162.
Although it is still too early to discern the full effects of the *KSR* ruling on the Federal Circuit, the indications are mixed regarding the direction the court will take for the nonobviousness requirement. Prior to *KSR*, the Federal Circuit’s rulings on appeals from infringement cases were split fairly evenly, with a slight bias toward finding the questioned patent nonobvious and valid. Post-*KSR*, the Federal Circuit seems slightly more inclined to invalidate patents for obviousness. In the twelve months following *KSR*, the Federal Circuit found patents invalid in almost 60% of the cases where obviousness was involved. While this number reflects an increase, it does not appear to be a significant departure from the court’s pre-*KSR* statistics. In addition, one Federal Circuit judge stated that he understood the *KSR* ruling to have little effect on the Federal Circuit’s approach to the nonobviousness analysis. It remains to be seen what the long-term effects of *KSR* will be on the nonobviousness inquiry at the Federal Circuit level.

III. ANALYSIS

Science progresses incrementally via the scientific method by using known methods to test educated predictions. The United States Supreme Court in *KSR v. Teleflex* stated that inventions created “according to known methods . . . [that] yield predictable results” are unpatentable, which is in direct conflict with the scientific method. In addition, the Court has failed to provide clear guidance regarding hindsight bias, a problem that is particularly important for inventions achieved using the scientific method. If the USPTO, the BPAI, and the courts interpret portions of the *KSR* decision literally, then almost every invention achieved using the scientific method will be rendered obvious and unpatentable. This result would prevent, not promote, the progress of the arts in direct opposition to the constitutional mandate of the Intellectual Property Clause.

A. The *KSR* Decision Reinstated an Unreasonably High and Unpredictable Nonobviousness Standard

“Those who cannot remember the past are condemned to repeat it.”
~ George Santayana
The patent system strives to balance the rights of the inventor with the rights of the public, and the nonobviousness requirement plays an important role in effectuating that goal. The requirement exists to prevent inventors from obtaining patent protection for combination inventions that remove important building blocks from the public domain. However, the KSR decision needlessly expanded the breadth and scope of the nonobviousness requirement. While the USPTO and the Federal Circuit may have allowed some seemingly ridiculous patents in the past, the better solution for the problem may have simply been to invalidate the offending patents or remove their subject matter from patentability. Nevertheless, the KSR decision raised the bar for patentability unnecessarily high and failed to provide clear guidance as to what level of inventiveness will satisfy the nonobviousness requirement.

In the KSR decision, the Supreme Court seemed to reinstate a nonobviousness standard similar to the “flash of genius” standard from Cuno Engineering, which was specifically abolished by the enactment of 35 U.S.C. § 103(a). The KSR decision stated that an invention obtained by combining “familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” Under this standard, an invention is likely to be unpatentable unless the result achieved is something extraordinary and unexpected. However, because the scientific method involves the prediction of an outcome from the use of known methods, any result derived from the use of the scientific method will, by definition, be a predictable result of combining familiar elements according to known methods, thereby making it unpatentable under KSR.

Additionally, KSR opened up the possibility that an invention may be proven to be obvious by showing that it was “obvious to try.” The Federal Circuit had consistently held that the fact that something was obvious to try was insufficient to render the invention obvious. The KSR decision stated that a “design need or market pressure to solve a problem . . . [with] a finite number of identified, predictable solutions” may render an invention unpatentable as “obvious to try.” An invention obtained using the scientific method will almost always be unpatentable under this standard because a scientist following the scientific method attempts to solve an identified problem by taking an inventory of the known methods available and making a prediction as to which one is the best avenue to pursue. While

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167 Graham v. John Deere Co., 383 U.S. 1, 15 (1966) (noting that the last sentence of section 103(a) was intended to abolish the “flash of genius” standard from Cuno Engineering).
168 KSR, 550 U.S. at 416.
169 Id. at 421.
170 In re Deuel, 51 F.3d 1552, 1559 (Fed. Cir. 1995) (“A general incentive does not make obvious a particular result, nor does the existence of techniques by which those efforts can be carried out.”).
171 KSR, 550 U.S. at 421.
some inventions are accidental, almost every inventor works toward achieving a specific goal, and that goal is often driven by a demonstrated need in the market. If an invention is obvious because of this reality, the incentive to continue trying to “build the better mousetrap” will be significantly diminished. Thus, the assertion that a combination patent can be found invalid simply because it was obvious to try has serious implications for many inventions, particularly those obtained using the scientific method.

These statements in *KSR* could potentially have a chilling effect on progress and innovation. In particular, corporations may be reluctant to invest the time and money in research and development if the legal costs to obtain a patent rise dramatically and there is reduced predictability regarding the ability to acquire patent protection for that investment. Furthermore, small inventors may find it much too expensive to obtain patents due to the increased amount of work for the patent attorney. Research and development is the backbone of scientific progress and is an important part of a healthy economy. Lack of predictability and increased legal costs could eventually lead to a downturn in scientific research in all areas and a decrease in the number of patents filed and issued.

The patent system needs a practical and objective framework for analyzing nonobviousness in order for it to achieve its goal of promoting the progress of the arts and sciences. The nonobviousness requirement will always involve an unavoidable element of subjectivity because the “person of ordinary skill” standard is susceptible to many interpretations. The Supreme Court condemned the Federal Circuit’s rigid use of the TSM test, yet it failed to provide a clear and consistent test in its place. If the TSM test is no longer acceptable, the Supreme Court must provide a better roadmap for the USPTO and the lower courts to follow. Increased flexibility for the USPTO, the BPAI, and the courts on the nonobviousness standard translates into reduced predictability as to whether or not a patent will be found valid. Rather than promoting innovation and encouraging inventors to invest time and money in research, the judicial policy embodied in the *KSR* decision could potentially restrain the advancement of the arts and sciences in direct opposition to the constitutional mandate of the Intellectual Property Clause.

**B. The KSR Opinion Minimized and Failed to Address the Problem of Hindsight Bias**

In *KSR*, the Supreme Court underestimated the gravity and

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172 Fox, *supra* note 47 (noting that the increased amount of work for patent attorneys could lead to an increase in cost to obtain a patent, forcing smaller inventors to do more of the legal work themselves).

173 Hinescheidt, *supra* note 99, at 153. The court establishes the fictitious legal “person of ordinary skill in the art” through expert testimony, which inevitably leads to a battle of the experts. *Id.*
pervasiveness of the problem of hindsight in the nonobviousness inquiry. The Supreme Court simply stated that the factfinder should be aware of hindsight bias and seek to avoid it. However, this statement underestimates the pervasiveness of the problem of hindsight and fails to offer an objective solution. Recent studies have shown that hindsight bias is a much more serious problem than previously thought, and the current judicial policies do little to prevent the problem. In light of the KSR decision, the nonobviousness requirement could become an even more significant hurdle to patentability in the absence of objective guidelines designed to combat hindsight bias.

Section 103(a) requires the patent examiner and the court to step back in time to consider whether the invention was obvious based only on the prior art and knowledge at that time. In practice, this analysis is much easier said than done. “Humans are cognitively unable to prevent knowledge gained through hindsight . . . from impacting their analysis of past events, as required for the proper non-obvious analysis.” This problem is compounded by the fact that patentees are required to fully disclose how to make and use their invention in order to receive patent protection. Once the factfinder sees the solution, particularly how it was achieved, the invention “appears to have been more obvious than it actually was.”

The effect of hindsight bias has been demonstrated in several recent studies involving mock jurors, and the results are clear—hindsight is a much more severe problem than initially expected. In one set of studies, jurors were divided into two groups, with each group being given general background information about the field of the invention, some relevant prior art references, and a description of the problem the inventor was seeking to solve. One set of jurors was shown the solution to the problem (the invention), while the other set was not, with some very striking results. In one scenario, only 34% of the jurors without knowledge of the solution found the patent to be obvious, while 73% of the jurors who had seen the invention found it to be obvious. In two different scenarios, the numbers reflected a similar trend (49% vs. 85% and 23% vs. 59%). The studies

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174 KSR, 550 U.S. at 421.
175 Mandel, supra note 63, at 338-39.
177 Mandel, supra note 63, at 336-37.
179 Mandel, supra note 63, at 337.
180 Id. at 337-38.
181 Id. at 337.
182 Id. at 337-38.
183 Id. at 337-38.
184 Id. at 338.
revealed a hindsight effect of 36% to 39%.185

Another set of studies testing jury instructions revealed similar results.186 One set of jurors received strong warnings about the possibility of hindsight bias and were instructed to guard against it, while the other set of jurors was not warned.187 The jurors who received the warnings regarding hindsight bias showed little difference from jurors who did not receive any instruction.188 The studies also showed that the Federal Circuit’s TSM test and the Supreme Court’s *Graham* factors did very little to reduce hindsight bias.189 These results indicate that a simple warning to the factfinder regarding the potential for hindsight bias is insufficient to avoid or combat it.190

The *KSR* decision provided several additional avenues through which an invention can be found obvious, while providing no further guidance for combating hindsight bias. For example, the opinion stated that “any need or problem known in the field of endeavor” can serve as a basis for establishing obviousness by showing that the invention was “obvious to try.”191 This policy seems to be an invitation to courts and patent examiners to “exercise hindsight in combining the prior art to render a claim invalid as obvious.”192 The *KSR* opinion also stated that common sense and the “inferences and creative steps that a person of ordinary skill in the art would employ” should all be used in analysis of the invention for nonobviousness,193 which seems to be a further invitation to engage in a hindsight-based analysis. The case offers no guidelines to lower courts for determining what constitutes common sense or permissible inferences and creative steps in any given case.

The problem of hindsight bias is particularly evident with inventions achieved using the scientific method. After identifying a particular problem, researchers study the prior art in the field of endeavor and determine which avenues appear promising based on what is already known in the area. Due to the process of the scientific method, the building blocks of the resulting invention will necessarily exist in the prior art, and the combination of those elements to obtain the invention will seem much more obvious in hindsight.194 As the Federal Circuit feared in *In re Dembiczak*, the patent

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185 Id. at 338.
186 Id. at 339.
187 Id.
188 Id.
189 Id.
190 Id. at 342.
192 Andrea G. Reister, *Enablement & Written Description: We Know It When We See It and a Word About Obviousness*, 910 PLI/PAT 479, 523 (2007).
193 *KSR*, 550 U.S. at 418.
194 See Hinneschiedt, *supra* note 99, at 155. The possibility that an invention is obvious because it was “obvious to try” may be particularly important for biotechnology inventions. *Id.* Many
applicant’s required disclosure detailing how to make and use the invention could be the patent’s undoing.\textsuperscript{195} The applicant’s disclosure provides a convenient roadmap into which the common sense and “inferences and creative steps” of a person of ordinary skill in the art may be inserted to show that the invention is obvious.\textsuperscript{196} Again, the \textit{KSR} decision offers little guidance for making the legal determination of when the combination of elements is sufficiently obvious to render the patent invalid.

This lack of guidance for combating hindsight bias is apparent in the USPTO’s examining procedures. Section 2142 of the MPEP states that the “tendency to resort to ‘hindsight’ based upon [the patent] applicant’s disclosure is often difficult to avoid due to the very nature of the examination process,” but “impermissible hindsight must be avoided.”\textsuperscript{197} Besides this statement, the MPEP provides no additional guidance as to how hindsight can be avoided. Coupled with the recently added ways in which an examiner can reject an application for obviousness, the MPEP’s ambiguous instruction regarding hindsight makes the need for an objective framework to combat hindsight even more critical. Without clear and objective guidelines, patents for inventions achieved using the scientific method will be particularly vulnerable to a hindsight-based invalidation for obviousness by the USPTO, the BPAI, and the courts.

\textbf{IV. Conclusion}

To achieve the goal of the Intellectual Property Clause to promote the progress of the arts and sciences, the patent system needs predictability and certainty. The \textit{KSR} opinion generated much controversy regarding the status of the nonobviousness requirement, and yet it failed to transform and clarify the requirement, as many on both sides of the issue hoped it would. Although the full effects of \textit{KSR} remain to be seen, the decision created more questions than it answered, and the section 103(a) standard is now perhaps higher and more confusing than ever. In particular, the judicial policy created by the \textit{KSR} decision appears to be in direct conflict with the scientific method, and this policy has serious implications for the future of research and development. \textit{KSR} also failed to provide clear guidance for combating hindsight bias, which is a particularly troublesome problem for inventions achieved using the scientific method. It remains to be seen if the Supreme Court will offer the clear, objective, and reliable guidelines necessary for the patent law system to achieve its purpose, or if \textit{KSR} \textit{v. Teleflex} will remain the primary law on the topic of obviousness.

\begin{itemize}
\item biotechnology inventions “spring from known components and methodologies found in [the] prior art.”
\item \textit{Id.}
\item \textit{In re Dembiczak, 175 F.3d 994, 999 (1999) (noting that patent applicant’s disclosure provides a “blueprint for piecing together the prior art to defeat patentability . . . .”).}
\item \textit{KSR, 550 U.S. at 418.}
\item MPEP, § 2142.
\end{itemize}