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INVESTIGATING PATENT LAW'S PRESUMPTION OF VALIDITY, PART II: AN EMPIRICAL ANALYSIS OF HOW UNCONSIDERED EVIDENCE AND EVIDENTIARY STANDARDS AFFECT JURY VERDICTS

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INTRODUCTION

Before 1982, rebutting a patent's presumption of validity generally required clear and convincing evidence. The standard would shift to a preponderance of the evidence, however, if a validity challenger introduced "unconsidered evidence," that is, prior art not considered during examination by the United States Patent and Trademark Office ("PTO"). Since 1982, rebutting a patent's presumption of validity has required clear and convincing evidence in all instances. The authors examined and compared empirical data from the pre- and post-1982 periods to determine the extent to which jury verdicts were affected by unconsidered evidence, and the extent to which these verdicts may have been affected by the corresponding evidentiary standards applied by the courts.

During the pre-1982 period, validity challengers introducing unconsidered evidence succeeded in establishing the factual bases of invalidity to juries more often than challengers relying on only considered evidence—thirty-two percent to thirteen percent, respectively.[1] Two factors may have contributed to this result: 1) the

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This article is the second part of an empirical study authored by Etan Chatlynne. *See* Etan S. Chatlynne, *UPDATE: Investigating Patent Law's Presumption of Validity*, PATENTLY-O (Nov. 7, 2010), http://www.patentlyo.com/patent/2010/11/update-investigating-patent-laws-presumption-of-validity.html; *see also* Etan S. Chatlynne, *Investigating Patent Law's Presumption of Validity—An Empirical Analysis*, 2010 PATENTLY-O PATENT L.J. 37, http://www.patentlyo.com/files/chatlynne.presumptionofvalidity.final.pdf.

[1] *See infra* Part IV.

relative evidentiary impact of unconsidered evidence over considered evidence, and 2) the reduced difficulty of satisfying a preponderance of the evidence standard instead of a clear and convincing evidentiary standard. The degree to which these factors individually contributed to a validity challenger's likelihood of success could not be determined from the pre-1982 data because the two factors did not appear separately during this period; shifting the standard depended on the challenger introducing unconsidered evidence.

Comparing the pre-1982 data with the post-1982 data permits the two factors to be decoupled because, during the post-1982 period, challengers introducing unconsidered evidence uniformly operated under a clear and convincing evidentiary standard. During the post-1982 period, validity challengers established the factual bases of invalidity thirty-four percent of the time.[2] Thus, in both periods, challengers introducing unconsidered evidence succeeded approximately one third of the time, even though the evidentiary standards were different during the two periods. This observation suggests that a challenger's likelihood of establishing the factual bases of invalidity is driven more by the evidentiary impact of unconsidered evidence than a shift to a preponderance of the evidence standard.

I. BACKGROUND

Patents are presumed valid.[3] The Patent Act places the burden of rebutting the presumption of validity on the challenging party, but it does not specify how courts should apply the presumption.[4] The Court of Appeals for the Federal Circuit ("Federal Circuit") requires clear and convincing evidence of the factual bases of invalidity.[5] In *Microsoft*

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[2] *See id.*

[3] 35 U.S.C. § 282 (2006). The Patent Act of 1952, Pub. L. No. 82-593, ch. 950, 66 Stat. 792, 812, codified the presumption of validity.

[4] *See* 35 U.S.C. § 282. ("The burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity."). Under Rule 301 of the Federal Rules of Evidence, "if a basic fact (Fact A) is established, then the fact-finder must accept that the presumed fact (Fact B) has also been established, unless the presumption is rebutted." 1 WEINSTEIN'S FEDERAL EVIDENCE § 301.02[1] (Matthew Bender & Co., 2011). "The opponent of the presumed fact, in order to rebut, generally has the burden of presenting enough evidence so that a reasonable jury could be convinced of the non-existence of the presumed fact." *Id.* § 301.02[3][C]. This requirement "has been variously described as the need to come forward with 'only some evidence' or the amount of evidence 'that would be sufficient to overcome a directed verdict.'" *Id.* (citations and footnotes omitted). The authors take no position on how the presumption of validity, the burden of production, or the burden of persuasion should be rebutted, or whether such rebuttal should be by clear and convincing evidence or a preponderance of the evidence.

[5] *See, e.g.*, Schumer v. Lab. Computer Sys., 308 F.3d 1304, 1315 (Fed. Cir. 2002) (citing Apotex USA, Inc. v. Merck & Co., 254 F.3d 1031, 1036 (Fed. Cir. 2001)); Ryco, Inc. v. Ag-Bag Corp., 857 F.2d 1418, 1423 (Fed. Cir. 1988) ("[A] patent is presumed valid, and the party attacking validity has the burden of proving facts supporting a conclusion of invalidity by clear

Corp. v. i4i Limited Partnership,[6] the Supreme Court will consider whether a preponderance of the evidence standard should be the standard for rebutting the presumption of validity, at least in instances where an invalidity challenge is based on unconsidered evidence.

Before the Federal Circuit's creation, all twelve regional circuits applied a preponderance of the evidence standard rather than a clear and convincing evidentiary standard[7] when the validity challenger introduced unconsidered evidence.[8] We used this two-standard framework to make a quantitative comparison of the rates for establishing the factual bases of invalidity under the two standards.[9]

Some of Microsoft's *amici* contend that the clear and convincing evidentiary standard has a "compelling effect on jurors" and that it is "tremendously difficult to persuade a jury to go against the decision of the Patent Office."[10] The present study represents the authors' efforts to test these assertions with quantitative evidence.

II. METHODOLOGY

This investigation includes two data sets. The first data set comprises the results of obviousness and novelty challenges from

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and convincing evidence.").

6 i4i Ltd. P'ship v. Microsoft Corp., 598 F.3d 831 (Fed. Cir. 2010), *cert. granted* 131 S. Ct. 647 (Nov. 29, 2010) (No. 10-290).

7 For uniformity, this paper uses "clear and convincing" to indicate standards higher than a preponderance of the evidence. Some of the regional circuits preferred "heightened standard" terminology.

8 *See* Futorian Mfg. Corp. v. Dual Mfg. & Eng'g, Inc., 528 F.2d 941, 943 (1st Cir. 1976); Formal Fashions, Inc. v. Braiman Bows, Inc., 369 F.2d 536, 539 (2d Cir. 1966); U.S. Expansion Bolt Co. v. Jordan Indus., Inc., 488 F.2d 566, 569 (3d Cir. 1973); Heyl & Patterson, Inc. v. McDowell Co., 317 F.2d 719, 722 (4th Cir. 1963); Baumstimler v. Rankin, 677 F.2d 1061, 1066 (5th Cir. 1982); Eisele v. St. Amour, 423 F.2d 135, 138-39 (6th Cir. 1970); Henry Mfg. Co. v. Commercial Filters Corp., 489 F.2d 1008, 1013 (7th Cir. 1972); Ralston Purina Co. v. Gen. Foods Corp., 442 F.2d 389, 390 (8th Cir. 1971); Alcor Aviation, Inc. v. Radair, Inc., 527 F.2d 113, 115 (9th Cir. 1975); Plastic Container Corp. v. Cont'l Plastics of Okla., Inc., 708 F.2d 1554, 1558 (10th Cir. 1983); Mfg. Research Corp. v. Graybar Elec. Co., 679 F.2d 1355, 1363-64 (11th Cir. 1982); Turzillo v. P & Z Mergentime, 532 F.2d 1393, 1399 (D.C. Cir. 1976). *But see* Kiva Corp. v. Baker Oil Tools, Inc., 412 F.2d 546, 551 (5th Cir. 1969) (explaining that the law in the Fifth Circuit is that "'prior use must be proved beyond a reasonable doubt'" (quoting Zachos v Sherwin-Williams Co., 177 F.2d 762, 763 (5th Cir. 1949))); *Mfg. Research Corp.*, 679 F.2d at 1359, 1360-66 (11th Cir. 1982) (setting aside a jury verdict with respect to anticipation and obviousness of one patent, but upholding it with respect to the on-sale bar of a similar patent even though "the district court instructed the jurors to presume that the . . . patents were valid unless Graybar had proven their invalidity by clear and convincing evidence").

9 *See* Etan S. Chatlynne, *The Burden of Establishing Patent Invalidity: Maintaining a Heightened Evidentiary Standard Despite Increasing "Verbal Variances*," 31 CARDOZO L. REV. 297, 318 (2009).

10 Brief for Apple, Inc. & Intel Corp. as Amici Curiae Supporting Reversal at 15-19, Microsoft Corp. v. i4i Ltd. P'ship, 131 S. Ct. 647 (2011) (No. 10-290), 2011 WL 380827, at *15-19 [hereinafter Apple/Intel Amici Brief].

February 1966, the date of the Supreme Court's decision in *Graham v. John Deere Co.*,[11] which resurrected jury trials in patent cases,[12] until October 1982, when the Federal Circuit issued its first opinion.[13] The second data set comprises the results of obviousness and novelty challenges from April 2008, one year after the Supreme Court's decision in *KSR International Co. v. Teleflex Inc.*,[14] which changed the legal standard for obviousness, until October 2010, shortly after Microsoft filed its Petition for Certiorari in *i4i*.[15]

The authors analyzed the validity challenges from the first data set (1966-1982) to determine whether: 1) the court instructed the jury to apply one of the evidentiary standards; 2) the court discussed unconsidered evidence that a jury could have considered in evaluating invalidity; and 3) the jury determined that the validity challenger satisfied its evidentiary burden for at least one claim.

In determining whether the court instructed the jury to apply a clear and convincing or a preponderance of the evidence standard, the authors inspected the cases for explicit jury instructions, special verdicts, special interrogatories, and instances where the court stated a jury's finding concerning whether there was unconsidered evidence. A finding that there was not unconsidered evidence permits the inference that the jury applied a clear and convincing evidentiary standard. Conversely, a finding that there was unconsidered evidence permits the inference that the jury applied a preponderance of the evidence standard.[16] These inferences follow from the regional circuits' application of a preponderance of the evidence standard rather than a clear and convincing evidentiary standard when the validity challenger introduced unconsidered evidence.[17]

In the instances where one could not determine which evidentiary standard the jury applied, these cases would still be included in the data set where indirect evidence in these cases permitted assumptions on the standards applied. For example, where a court discussed unconsidered evidence, it was assumed that the court instructed the jury to apply a

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11 383 U.S. 1 (1966).

12 *See, e.g.*, Norfin, Inc. v. Int'l Business Mach. Corp., 453 F. Supp. 1072, 1074 (D. Col. 1978).

13 South Corp. v. United States, 690 F.2d 1368 (Fed. Cir. 1982).

14 550 U.S. 398 (2007).

15 *See* Petition for a Writ of Certiorari, Microsoft Corp v. i4i Ltd. P'ship, 131 S. Ct. 647 (2010) (No. 10-290), 2010 WL 3413088 (filed Aug. 27, 2010). These challenges were previously analyzed. *See* Etan S. Chatlynne, *UPDATE: Investigating Patent Law's Presumption of Validity*, PATENTLY-O (Nov. 7, 2010), http://www.patentlyo.com/patent/2010/11/update-investigating-patent-laws-presumption-of-validity.html; *see also* Etan S. Chatlynne, *Investigating Patent Law's Presumption of Validity—An Empirical Analysis*, 2010 PATENTLY-O PATENT L.J. 37, http://www.patentlyo.com/files/chatlynne.presumptionofvalidity.final.pdf.

16 *See, e.g.*, White v. Mar-Bel, Inc., 509 F.2d 287, 290 (5th Cir. 1975) (discussing the jury's rejection of the contention that the uncited prior art was closer to the patent than the file history prior art); Solvex Corp. v. Freeman, 459 F. Supp. 440, 447 (W.D. Va. 1977) ("The jury found that in the prosecution of the Myers Patent the best prior art was considered by the Patent Office. . .").

17 *See supra* note 8.

preponderance of the evidence standard. Where the court did not discuss unconsidered evidence, it was assumed that the court instructed the jury on a clear and convincing evidentiary standard.[18]

The authors analyzed the challenges from the second data set (for 2008-2010) to determine whether: 1) the challenger introduced unconsidered evidence; and 2) the jury determined that the validity challenger satisfied its evidentiary burden for at least one claim. For this data set, evidence was deemed unconsidered if it was: 1) discussed in the Federal Circuit opinion, the district court opinion, or a party's brief; and 2) not listed on the front of the asserted patent.

The approach for determining whether evidence was unconsidered is different for the two data sets. From 1966 to 1982, for evidence to be "unconsidered," some of the regional circuits required that the purported evidence not be cumulative with respect to considered evidence. Such discussion is largely absent in the more recent opinions, ostensibly because unconsidered evidence no longer results in an evidentiary-standard shift. Accordingly, for the second data set, the unconsidered evidence was assumed not cumulative.

III. RESULTS

A. 1966 to 1982[19]

Figure 1 is a comparison of jury verdicts where the evidentiary standard that the jury applied is known. The left bar reflects that nineteen patents had their validity challenged under a clear and convincing evidentiary standard; for two of these patents, the validity challengers established the factual bases of invalidity. The right bar reflects that four patents had their validity challenged under a preponderance of the evidence standard; for two of these patents, the validity challengers established the factual bases of invalidity.[20]

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[18] This indirect evidence approach is imperfect, but an assumption-free approach is not feasible because special verdicts and interrogatories from before 1982 are not readily obtainable. Appendix A includes a data table listing each challenge and the assumed evidentiary standards the juries applied.

[19] Data for this period are provided in Appendix A.

[20] No determination was made for one patent. *See* Spound v. Mohasco Indus., 534 F.2d 404, 408 (1st Cir. 1976).

Figure 1. Number of Patents for Which the Factual Bases of Invalidity Were Established in Cases where the Jury Instruction is Known

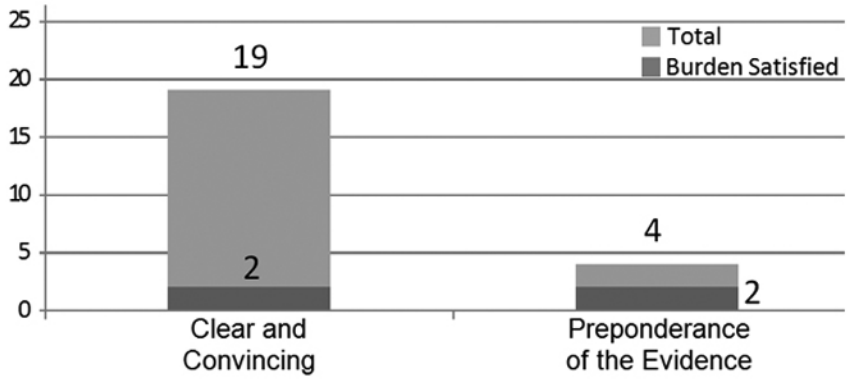


Figure 2 is a comparison of jury verdicts where the evidentiary standard that the jury applied was assumed from indirect evidence in the cases. The left bar reflects that twenty-six patents had their validity challenged under a clear and convincing evidentiary standard; for four of these patents, the validity challengers established the factual bases of invalidity. The right bar reflects that twenty-one patents had their validity challenged under a preponderance of the evidence standard; for six of these patents, the validity challengers established the factual bases of invalidity.

Figure 2. Number of Patents for Which the Factual Bases of Invalidity Were Established in Cases where the Jury Instruction is Assumed from the Introduction of Unconsidered Evidence

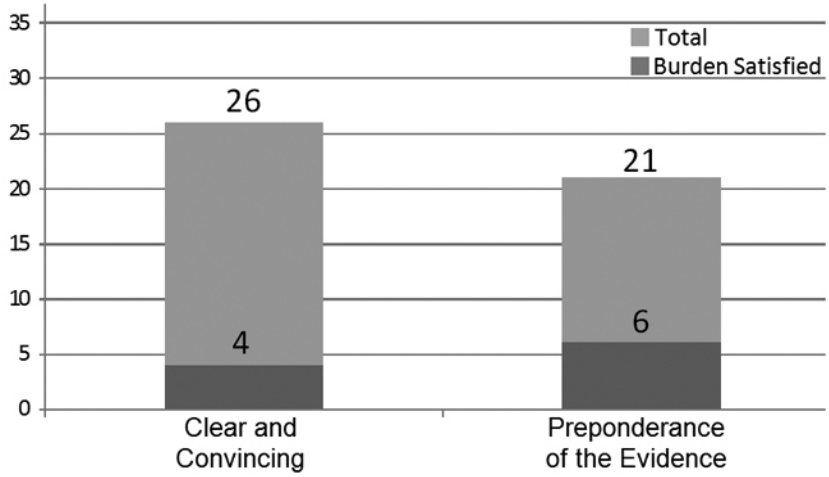
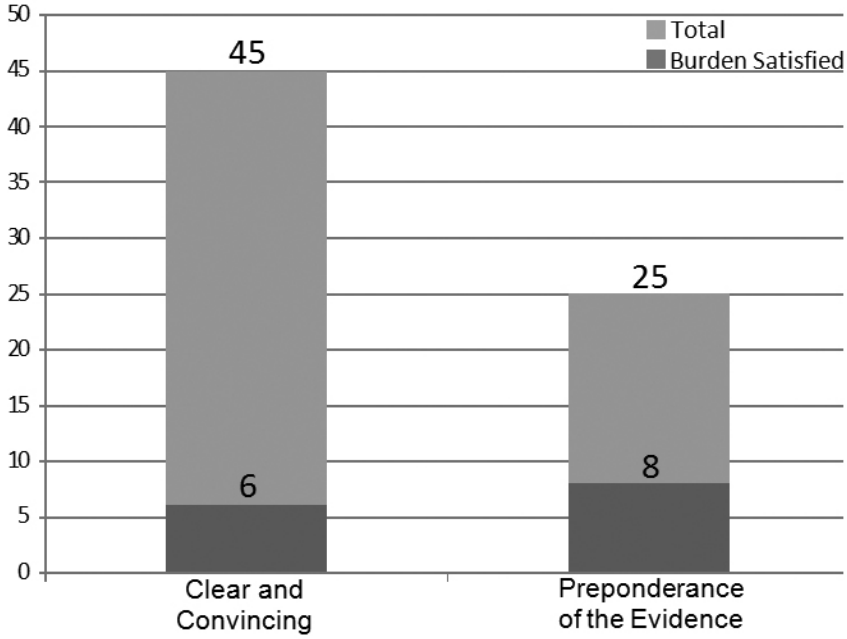


Figure 3 displays a combination of Figures 1 and 2; it shows a comparison of jury verdicts where the evidentiary standard that the jury applied was known or assumed. The left bar reflects that forty-five patents had their validity challenged under a clear and convincing evidentiary standard; for six of these patents, the validity challengers established the factual bases of invalidity. The right bar reflects that twenty-five patents had their validity challenged under a preponderance of the evidence standard; for eight of these patents the validity challengers established the factual bases of invalidity.

Figure 3. Number of Patents for Which the Factual Bases of Invalidity Were Established in Cases where the Jury Instruction is Known or Assumed



B. 2008-2010[21]

In five validity challenges, the challengers did not introduce any unconsidered evidence. These challengers did not satisfy the clear and convincing evidentiary standard in any of them. In thirty-eight challenges, the challengers introduced unconsidered evidence and satisfied the clear and convincing evidentiary standard for thirteen of them.

[21] Data for this period are provided in Appendix B.

IV. ANALYSIS

Applying a standard statistical test, the data sets depicted in Figures 1 and 2 do not indicate a difference between success rates under the two evidentiary standards.[22] This same test demonstrates a difference for the data set depicted in Figure 3.[23] For this data set, the validity challenger succeeded in establishing the factual bases of invalidity under a clear and convincing evidentiary standard for thirteen percent of the challenged patents, and under a preponderance of the evidence standard for thirty-two percent of the challenged patents.

However, the degree to which the difference in the applied evidentiary standards individually affected the success rate cannot be determined because two factors may have together caused the change. The first factor is the shift to a preponderance of the evidence standard for cases involving unconsidered evidence. The second factor is simply the perceived weight of the unconsidered evidence. These two factors do not appear separately; a challenger must present unconsidered evidence to shift the standard. Therefore, the degree to which each factor individually contributed to the difference in the success rates during the period from 1966 to 1982 was not determined.

Consider, for example, *Futorian Manufacturing Corp. v. Dual Manufacturing & Engineering, Inc.*,[24] where the applicant failed to cite twelve relevant prior art references, including one of its own patents. The district court instructed the jury to apply a preponderance of the evidence standard, and the jury found that the challenger established the factual bases of invalidity. While it is unknown if the jury's determination would have been different under a clear and convincing evidentiary standard, it is unlikely that the jury would have entirely ignored the patentee's failure to cite relevant art, especially its own patent. This suggests that a challenger's introduction of unconsidered evidence that is more relevant and material than the considered evidence could have increased the challenger's likelihood of success over what it would have been had the challenger only relied on considered evidence.

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[22] This is not to say that no difference exists between the two respective success rates—only that the differences in the success rates could have been caused by statistical effects. In other words, the data do not allow us to conclusively reject the null hypothesis (i.e., that there is no true difference between the success rates) for the data sets of Figure 1 and Figure 2. This conclusion is based on application of a single-tail heteroscedastic Student's T-test. The p-values for the data set where the evidentiary standard was known (Figure 1) is 0.115. The p-value for the data set where the evidentiary standard was assumed (Figure 2) is 0.147. Typical threshold p-values for rejecting a null hypothesis are 0.05, 0.01, and 0.005. Lower p-values are generally used when increased reliability is desired and higher p-values are generally used when increased reliability is not necessary. Although a proponent for the clear and convincing standard might advocate for a lower p-value, for the sake of discussion, the authors assume a p-value of 0.05. P-values were calculated using Microsoft Excel's "TTEST" function.

[23] The p-value for this data set is 0.040.

[24] 528 F.2d 941, 942-43 (1st Cir. 1976).

This aspect of *Futorian* illustrates why we cannot conclude from the data for the period from 1966 to 1982 whether a shift from a clear and convincing evidentiary standard to a preponderance of the evidence standard influenced the change in the validity challengers' success rates.

To separate the weight of the evidence and evidentiary standard variables, the authors compared the data from 1966 to 1982, when validity challengers could introduce unconsidered evidence to shift the evidentiary standard from clear and convincing to a preponderance of the evidence, with the data from 2008 to 2010, when validity challengers always needed to satisfy a clear and convincing evidentiary standard, even when they introduced unconsidered evidence. This comparison permits a determination about the individual effect that a shift to a preponderance of the evidence standard had on jury verdicts because data for both evidentiary standards is available from challenges based on unconsidered evidence.

Challengers that introduced unconsidered evidence from 1966 to 1982 satisfied a preponderance of the evidence standard thirty-two percent of the time—i.e., eight out of twenty-five times.[25] From 2008 to 2010, such challengers satisfied the clear and convincing evidentiary standard thirty-four percent of the time—i.e., thirteen out of thirty-eight times.[26] Therefore, irrespective of the evidentiary standard, such challengers in both periods established the factual bases of invalidity approximately one third of the time.[27] This indicates that the clear and convincing evidentiary standard may not be as significant a driver in invalidity outcomes as some have suggested.

Challengers that did not introduce unconsidered evidence from 1966 to 1982 satisfied a clear and convincing evidentiary standard thirteen percent of the time—i.e., six out of forty-five times. From 2008 to 2010, such challengers never satisfied a clear and convincing evidentiary standard—i.e., zero out of five times.

CONCLUSION

From 1966 to 1982 and from 2008 to 2010, validity challengers introducing unconsidered evidence succeeded about one third of the time even though the evidentiary standards for rebutting a patent's presumption of validity were different during these two periods.

The comparison herein of data from periods separated by more than twenty-five years surely implicates additional factors such as

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[25] *See supra* Part III.A & Figure 3.

[26] *See supra* Part III.B.

[27] Comparing these two sets demonstrates that there is not enough data from which to conclude that there is a statistically significant difference between 32% and 34%; the p-value is 0.472.

changes in applicable practice, procedure, search technology and much of the surrounding body of legal rules, including the change made by the Supreme Court to the legal standard for obviousness in *KSR*.[28] These factors could impact this investigation in ways the authors could neither determine nor account for.

Nevertheless, subject to the validity of the assumptions employed, this investigation suggests that a challenger's likelihood of establishing the factual bases of invalidity are driven more by the likely greater impact of unconsidered evidence than by a shift to a preponderance of the evidence standard. Whether this means that the clear and convincing evidentiary standard has a "compelling effect on jurors" and that it is "tremendously difficult to persuade a jury to go against the decision of the Patent Office,"[29] the authors cannot say. The data, however, suggest that a shift to a preponderance of the evidence standard will not significantly affect a validity challenger's ability to establish the factual bases of invalidity to a jury.

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[28] KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398 (2007). In *KSR*, the Supreme Court rejected the Federal Circuit's inflexible application of the teaching, suggestion, or motivation test for determining obviousness. *Id.* at 419. Some think that this made it easier for challengers to invalidate patents. However, because the factual bases of obviousness are bound up with the legal conclusion of obviousness, we cannot determine the extent, if any, that *KSR* may account for some of the successful challenges before juries between 2008 and 2010.

[29] Apple/Intel Amici Brief, *supra* note 10, at 15-19.

APPENDIX A

Data from cases were collected to determine: 1) the patents challenged; 2) the statutory basis for the challenge; 3) whether the jury received an instruction to apply either evidentiary standard; 4) whether the challenger introduced unconsidered evidence; and 5) whether the challenger established the factual bases of invalidity. The data table begins on the next page.

In the "Explicit Jury Instruction?" column, "H" means that the jury was instructed to apply a clear and convincing evidentiary standard, "P" means that the jury was instructed to apply a preponderance of the evidence standard, and "N" means that the case did not discuss the instruction. In the "Unconsidered Evidence?" column, "Y" means that the challenger introduced unconsidered evidence, and "N" means that the case did not indicate whether this occurred. In the "Challenger Successful in Convincing Jury?" column, "Y" means that the challenger established the factual bases of invalidity to the jury, "N" means that the challenger did not, and "?" means that this could not be determined.

The "Combined Standard" combines the "Explicit Jury Instruction?" and "Unconsidered Evidence?" columns.

Case	Patent No.	Challenge Type	Explicit Jury Instruction?	Unconsidered Evidence?	Combined Standard	Challenger Successful in Convincing Jury?
Allen Industries, Inc. v. National Sponge Cushion, Inc., 292 F. Supp. 504 (D.N.J. 1967)	2740739	102, 103, 112	N	Y	P	N
Analytical Controls v. Am. Hosp. Supply Corp., 518 F. Supp. 896 (D. Ind. 1981)	3933925	102, 103, 112	H	N	H	N
Analytical Controls v. Am. Hosp. Supply Corp., 518 F. Supp. 896 (D. Ind. 1981)	4025176	102, 103, 112	H	N	H	N
Antonious v. Progroup, Inc., 216 U.S.P.Q. 706 (E.D. Tenn. 1982)	3588917	103	N	Y	P	N
Baumstimler v. Rankin, 677 F.2d 1061 (5th Cir. 1982)	3406757	103	H	Y	H	N
Baumstimler v. Rankin, 677 F.2d 1061 (5th Cir. 1982)	3446283	103	H	Y	H	N
Black & Decker Mfr. Co. v. Sears, Roebuck & Co., 679 F.2d 1011 (4th Cir. 1982)	3615087	103	N	N	H	N
Black & Decker Mfr. Co. v. Sears, Roebuck & Co., 679 F.2d 1011 (4th Cir. 1982)	4076229	103	N	N	H	N

Case	Patent No.	Challenge Type	Explicit Jury Instruction?	Unconsidered Evidence?	Combined Standard	Challenger Successful in Convincing Jury?
Burger Train Sys., Inc. v. Ballard, 552 F.2d 1377 (10th Cir. 1977)	D211010	?	N	N	H	N
Burger Train Sys., Inc. v. Ballard, 552 F.2d 1377 (10th Cir. 1977)	3363723	?	N	N	H	N
Calderon Automation, Inc. v. Gen. Motors Corp. 206 U.S.P.Q. 782 (E.D. Mich. 1980)	3472309	103	N	Y	P	N
Calderon Automation, Inc. v. Gen. Motors Corp. 206 U.S.P.Q. 782 (E.D. Mich. 1980)	3575230	103	N	Y	P	N
Carson Mfr. Co. v. Carsonite Int'l Corp., 686 F.2d 665 (9th Cir. 1981)	4092081	102, 103	N	N	H	N
Celebrity, Inc. v. A&B Instrument Co., 573 F.2d 11 (10th Cir. 1978)	D203251	102, 103	N	N	H	N
Celotex Corp. v. U.S. Gypsum Co.. 204 U.S.P.Q. 745 (N.D. Ill. 1979)	354154	103	N	Y	P	N
CMI Corp. v. Barber-Greene Co. 214 U.S.P.Q. 690 (N.D. Ill. 1981); 683 F.2d 1061 (7th Cir. 1982)	4139318	103	P	Y	P	Y
Control Components, Inc. v. Valtek, Inc., 609 F.2d 763 (5th Cir. 1980)	3514074	103	N	N	H	N
Dual Mfr. & Eng'g, Inc. v. Burris Indus., Inc., 619 F.2d 660 (7th Cir. 1980)	Re28210	103	N	Y	P	N
Dual Mfr. & Eng'g, Inc. v. Burris Indus., Inc., 619 F.2d 660 (7th Cir. 1980)	Re29483	103	N	Y	P	N
DuBuit v. Harwell Enters., Inc. 540 F.2d 690 (4th Cir. 1976)	2090300	?	N	N	H	N
E.I. duPont de Nemours & Co. v. Berkley & Co., 204 U.S.P.Q. 594 (N.D. Iowa 1979); 620 F.2d 1247 (8th Cir. 1980)	3063189	102, 103	N	Y	P	Y
Ebling v. Pak-Mor Mfr. Co., 683 F.2d 909 (5th Cir. 1982)	3910434	103	N	Y	P	Y
Futorian Mfr. Corp. v. Dual Mfr. & Eng'g., Inc. 528 F.2d 941 (1st Cir. 1976)	3163464	103	P	Y	P	Y
Gaddis v. Calgon Corp., 506 F.2d 880 (5th Cir. 1975)	3425669	103	H	N	H	N

Case	Patent No.	Challenge Type	Explicit Jury Instruction?	Unconsidered Evidence?	Combined Standard	Challenger Successful in Convincing Jury?
Hammerquist v. Clarke's Sheet Metal, Inc., 658 F.2d 1319 (9th Cir. 1981)	3854910	103, 112	N	N	H	N
Handgards, Inc. v. Johnson & Johnson, 1976 Trade Cas. P61,138 (N.D. Cal 1976)	N/A (Orsini)	102, 103	N	N	H	N
Harrington Mfr. Co. v. Taylor Tabacco Enters., Inc., 664 F.2d 938 (4th Cir. 1981)	3507103	?	H	N	H	N
Harrington Mfr. Co. v. Taylor Tabacco Enters., Inc., 664 F.2d 938 (4th Cir. 1981)	3902304	?	H	N	H	N
Holmes v. Thew Shovel Co., 305 F. Supp. 139 (N.D. Ohio 1969)	3043445	102, 103	H	N	H	N
Howes v. Great Lakes Press Corp., 679 F.2d 1023 (2d Cir. 1982)	3966396	101, 102, 103, 112	N	N	H	N
I.U. Tech. Corp. v. Research-Cottrell, Inc., 641 F.2d 298 (5th Cir. 1981)	3785840	102, 103, 112	N	N	H	Y
Int'l Envtl. Dynamics v. Fraser, 647 F.2d 77 (9th Cir. 1981)	3260028	102, 103	N	N	H	Y
Kiva Corp. v. Baker Oil Tools, Inc. 412 F.2d 546 (5th Cir. 1969)	2799346	102, 103	H	N	H	Y
Kiva Corp. v. Baker Oil Tools, Inc. 412 F.2d 546 (5th Cir. 1969)	2806532	102, 103	H	N	H	Y
Layne-N.Y. Co., Inc. v. Allied Asphalt Co., 363 F. Supp. 299 (W.D. Pa. 1973); 501 F.2d 405 (3d Cir. 1974)	3469405	101, 102, 103	H	Y	H	N (patent valid, claim 7 invalid)
Lear Siegler, Inc. v. Ark-Ell Springs, Inc., 569 F.2d 286 (5th Cir. 1978)	3071168	102	N	N	H	N
Mfr. Research Corp. v. Graybar Elec. Co., 679 F.2d 1355 (11th Cir. 1982)	388101	102	H	Y	H	N
Mfr. Research Corp. v. Graybar Elec. Co., 679 F.2d 1355 (11th Cir. 1982)	4052879	103	H	Y	H	N
Mfr. Research Corp. v. Graybar Elec. Co., 679 F.2d 1355 (11th Cir. 1982)	3613430	102/103	H	Y	H	N
May v. Am. Sw. Waterbed Distribs., 218 U.S.P.Q. 433 (N.D. Tex. 1982)	3973282	101, 103	N	Y	P	N

Case	Patent No.	Challenge Type	Explicit Jury Instruction?	Unconsidered Evidence?	Combined Standard	Challenger Successful in Convincing Jury?
Medtronic, Inc. v. Catalyst Research Corp., 547 F. Supp. 401 (D. Minn 1982)	3660163	103, 112	N	Y	P	Y
Medtronic, Inc. v. Catalyst Research Corp., 547 F. Supp. 401 (D. Minn 1982)	3647562	103, 112	N	Y	P	Y
Nickola v. Peterson, 410 F. Supp. 590 (E.D. Mich. 1976); 580 F.2d 898 (6th Cir. 1978)	Re 27400	101, 103	H	N	H	N
Nippon Elec. Glass Co. v. Sheldon, 539 F. Supp. 542 (S.D.N.Y. 1982)	3543073	103	N	Y	P	N
Nippon Elec. Glass Co. v. Sheldon, 539 F. Supp. 542 (S.D.N.Y. 1982)	361094	103	N	Y	P	N
Norfin, Inc. v. Int'l Business Mach. Corp., 453 F. Supp. 1072 (D. Col. 1978); 625 F.2d 357 (10th Cir. 1980)	3414254	102, 103	H	N	H	N
Panther Pumps & Equip. Co. v. Hydrocraft, Inc., 468 F.2d 225 (7th Cir. 1972)	3254845	103	N	N	H	N
Panther Pumps & Equip. Co. v. Hydrocraft, Inc., 468 F.2d 225 (7th Cir. 1972)	3367270	103	N	N	H	N
Pate Co. v. RPS Corp., 212 U.S.P.Q. 620 (N.D. Ill. 1981); 685 F.2d 1019 (7th Cir. 1982)	3807110	103	N	Y	P	N
Pederson v. Stewart-Warner Corp., 400 F. Supp. 1262 (N.D. Ill. 1975); 536 F.2d 1179 (7th Cir. 1976)	3478606	103	N	Y	P	N
Pickering v. Holman, 459 F.2d 403 (9th Cir. 1972)	3266015	102	N	N	H	Y
Robbins Co. v. Dresser Indus., Inc., 554 F.2d 1289 (5th Cir. 1977)	3220494	103	N	N	H	N
Solvex Corp. v. Freeman, 459 F. Supp. 440 (W.D. Va. 1977)	3311928	103	N	Y	P	Y
Solvex Corp. v. Freeman, 459 F. Supp. 440 (W.D. Va. 1977)	3373471	102, 112	N	N	H	Y
Span-Deck, Inc. v. Fab-Con, Inc., 677 F.2d 1237 (8th Cir. 1982)	3217375	102	N	N	H	N

Case	Patent No.	Challenge Type	Explicit Jury Instruction?	Unconsidered Evidence?	Combined Standard	Challenger Successful in Convincing Jury?
Span-Deck, Inc. v. Fab-Con, Inc., 677 F.2d 1237 (8th Cir. 1982)	3523343	102, 103	N	N	H	N
Spound v. Mohasco Indus., 186 U.S.P.Q. 183 (D. Mass. 1975); 534 F.2d 404 (1st Cir. 1976)	2884992	103	P	Y	P	N
Spound v. Mohasco Indus., 186 U.S.P.Q. 183 (D. Mass. 1975); 534 F.2d 404 (1st Cir. 1976)	2958374	103	P	Y	P	?
Square Liner 360 degrees, Inc. v. Chisum, 215 U.S.P.Q. 1110 (D. Minn. 1981); 691 F.2d 362 (8th Cir. 1982)	3888100	102, 103, 112	N	Y	P	N
Square Liner 360 degrees, Inc. v. Chisum, 215 U.S.P.Q. 1110 (D. Minn. 1981); 691 F.2d 362 (8th Cir. 1982)	3630066	102, 103, 112	N	Y	P	N
Sterner Lighting, Inc. v. Allied Elec. Supply, Inc. 431 F.2d 539 (5th Cir. 1970)	Sterner	102, 103	N	N	H	N
Strada v. AMF, Inc., 218 U.S.P.Q. 224 (N.D. Ill. 1982)	D238268	103	N	Y	P	Y
Swofford v. B&W, Inc., 251 F. Supp. 851 (S.D. Tex. 1966)	2826253	102, 103	H	N	H	N
Tights Inc. v. Acme-McCrary Corp., 541 F.2d 1047 (4th Cir. 1975)	Re25360	102, 103	H	N	H	N
U.S. Phillips Corp. v. Fero Corp., 522 F.2d 1100 (6th Cir. 1975)	2762777	?	N	N	H	N
U.S. Phillips Corp. v. Fero Corp., 522 F.2d 1100 (6th Cir. 1975)	2762778	?	N	N	H	N
Velo-Bind, Inc. v. Minn. Mining & Mfr. Co., 647 F.2d 965 (9th Cir. 1980)	3608117	102, 103, 112	N	N	H	N
Velo-Bind, Inc. v. Minn. Mining & Mfr. Co., 647 F.2d 965 (9th Cir. 1980)	3756625	102, 103, 112	N	N	H	N
White v. Mar-Bel, Inc., 369 F. Supp. 1321 (M.D. Fla. 1973); 509 F.2d 287 (5th Cir. 1975)	3496812	101, 102, 103	H	N	H	N
Zilk v. Deaton Fountain Serv., 257 F. Supp. 458 (N.D. Cal. 1966)	2887250	103	N	Y	P	N

APPENDIX B

Data from cases were collected to determine: 1) the patents challenged; 2) the statutory basis for the challenge; 3) whether the challenger introduced unconsidered evidence; and 4) whether the challenger established the factual bases of invalidity.

Case Name	Patent No.	Challenge Type	Unconsidered Evidence?	Challenger Successful in Convincing Jury?
Alloc, Inc. v. Pergo, Inc., 366 F. App'x 173 (Fed. Cir. 2010)	6421970	103	Y	Y
Alloc, Inc. v. Pergo, Inc., 366 F. App'x 173 (Fed. Cir. 2010)	6397547	103	Y	Y
Anascape, Ltd. v. Nintendo of Am., Inc., 601 F.3d 1333 (Fed.Cir. 2010).	6906700	102	Y	N
Applera Corp. v. Illumina, Inc., 375 F. App'x 12 (Fed. Cir. 2010)	5969119	103	Y	N
Blackboard, Inc. v. Desire2Learn, Inc., 574 F.3d 1371 (Fed. Cir. 2009)	6988138	102	Y	N
Broadcom Corp. v. Qualcomm, Inc., 543 F.3d 683 (Fed. Cir. 2008)	6847686	102	Y	N
Broadcom Corp. v. Qualcomm, Inc., 543 F.3d 683 (Fed. Cir. 2008)	5657317	102	Y	N
Cordis Corp. v. Boston Sci. Corp., 561 F.3d 1319 (Fed. Cir. 2009)	5922021	103	N	N
Cordis Corp. v. Boston Sci. Corp., 561 F.3d 1319 (Fed. Cir. 2009)	5895406	102	Y	N
Dickson Indus., Inc. v. Patent Enforcement Team, LLC, 333 F. App'x 514 (Fed. Cir. 2009).	4701069	102	Y	Y
Ecolab, Inc. v. FMC Corp., 569 F.3d 1335 (Fed. Cir. 2009)	6010729	102	Y	Y
Ecolab, Inc. v. FMC Corp., 569 F.3d 1335 (Fed. Cir. 2009)	6113963	103	Y	Y
Exergen Corp. v Wal-Mart Stores, Inc., 575 F.3d 1312 (2009)	6047205	102	N	N
Fresenius USA, Inc. v. Baxter Int'l, Inc., 582 F.3d 1288 (Fed. Cir. 2009)	5744027	103	Y	Y

Case Name	Patent No.	Challenge Type	Unconsidered Evidence?	Challenger Successful in Convincing Jury?
Fresenius USA, Inc. v. Baxter Int'l, Inc., 582 F.3d 1288 (Fed. Cir. 2009)	6284131	103	Y	Y
Gemtron Corp. v. Saint-Gobain Corp., 572 F.3d 1371 (Fed. Cir. 2009)	6679573	103	N	N
Hearing Components Inc. v. Shure Inc., 600 F.3d 1357 (Fed.Cir 2010)	4880076	103	Y	N
Hearing Components Inc. v. Shure Inc., 600 F.3d 1357 (Fed.Cir 2010)	5002151	103	Y	N
i4i Ltd. v. Microsoft Corp., 598 F.3d 831 (Fed. Cir. 2010)	5787449	102/103	Y	Y
Kinetic Concepts, Inc. v. Bule Sky Med. Group, Inc., 554 F.3d 1010 (Fed. Cir. 2009)	5636643	103	Y	N
Kinetic Concepts, Inc. v. Bule Sky Med. Group, Inc., 554 F.3d 1010 (Fed. Cir. 2009)	5645081	103	Y	N
Lexion Med., LLC v. Northgate Techs., Inc., 292 F. App'x 42 (Fed. Cir. 2008).	5411474	103	Y	N
Lucent Techs., Inc. v Gateway Inc., 580 F.3d 1301 (Fed. Cir. 2009).	4763356	103	Y	N
Muniauction, Inc. v. Thomson Corp., 532 F.3d 1318 (Fed Cir. 2008).	6161099	103	N	N
Orion IP, LLC. v. Hyundai Motor Am., 605 F.3d 967 (Fed.Cir 2010)	5367627	102	Y	N
Philip Wyers v. Master Lock Co., 616 F.3d 1231 (Fed. Cir. 2010).	6672115	103	Y	N
Philip Wyers v. Master Lock Co., 616 F.3d 1231 (Fed. Cir. 2010).	7165426	103	Y	N
Philip Wyers v. Master Lock Co., 616 F.3d 1231 (Fed. Cir. 2010).	7225649	103	Y	N
Power-One, Inc. v. Artesyn Techs., Inc., 599 F.3d 1343 (Fed.Cir 2010)	7000125	103	Y	N
Pressure Prods. Med. Supplies, Inc. v. Greatbatch Ltd., 599 F.3d 1308 (Fed. Cir. 2010)	5125904	102/103	Y	N
Pressure Prods. Med. Supplies, Inc. v. Greatbatch Ltd., 599 F.3d 1308 (Fed. Cir. 2010)	5312355	102/103	Y	N

Case Name	Patent No.	Challenge Type	Unconsidered Evidence?	Challenger Successful in Convincing Jury?
Rothman v. Target Corp., 556 F.3d 1310 (Fed. Cir. 2009)	6855029	103	Y	Y
Siemens AG v. Seagate Tech., 369 F. App'x 118 (Fed. Cir. 2010)	5686838	102/103	Y	Y
Silicon Graphics, Inc. v. ATI Techs., Inc., 607 F.3d 784 (Fed.Cir. 2010)	6650327	102	Y	N
Spine Solutions, Inc. v. Medtronic Sofamor Danek USA, Inc., __ F.3d __ , No. 2009-1538, 2010 WL 3515467 (Fed. Cir. Sept. 9, 2010)	6936071	103	N	N
Therasense, Inc. v. Becton, Dickinson & Co., 593 F.3d 1325 (Fed. Cir. 2010)	5628890	103	Y	Y
Verizon Servs. Corp. v. Cox Fibernet Va. Inc., 602 F.3d 1325 (Fed. Cir. 2010)	6282574	102/103	Y	Y
Verizon Servs. Corp. v. Cox Fibernet Va. Inc., 602 F.3d 1325 (Fed. Cir. 2010)	6104711	102/103	Y	Y
Verizon Servs. Corp. v. Cox Fibernet Va. Inc., 602 F.3d 1325 (Fed. Cir. 2010)	6430275	102/103	Y	N
Verizon Servs. Corp. v. Cox Fibernet Va. Inc., 602 F.3d 1325 (Fed. Cir. 2010)	6292481	102/103	Y	N
Verizon Servs. Corp. v. Cox Fibernet Va. Inc., 602 F.3d 1325 (Fed. Cir. 2010)	6137869	102/103	Y	N
Verizon Servs. Corp. v. Cox Fibernet Va. Inc., 602 F.3d 1325 (Fed. Cir. 2010)	6636597	102/103	Y	N
Voda v. Cordis Corp., 536 F.3d 1311 (Fed. Cir. 2008).	6083213	102/103	Y	N