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ARE DISTRICT COURT JUDGES EQUIPPED TO RESOLVE PATENT CASES?

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> "When I use a word," Humpty Dumpty said, in a rather scornful tone, "it means just what I choose it to mean — neither more nor less."
> "The question is," said Alice, "whether you can make words mean so many different things."
> "The question is," said Humpty Dumpty, "which is to be master — that's all."[1]

I. INTRODUCTION

Can the patent system flourish if the scope of the patentee's property right is wrongly assessed one-third of the time? This Article presents the results of an empirical study that shows that district court judges improperly construe patent claim terms in 33% of the cases appealed to the Federal Circuit.[2] This is problematic for two reasons. First, it raises concerns about the efficiency of an adjudication system where no appellate review of these decisions is permitted until all issues are resolved by the trial court applying its claim construction. Since claim construction is the touchstone for any infringement or validity analysis, an erroneous claim construction impacts most liability decisions. The data show that errors in district court claim constructions require reversing or vacating judgments in 81% of these cases. In the absence of a route for expedited appeal of claim construction, district courts are forced to proceed with lengthy[3] and

1. LEWIS CARROLL, ALICE'S ADVENTURES IN WONDERLAND AND THROUGH THE LOOKING GLASS 190 (Roger L. Green ed., Oxford Univ. Press 1971).

2. The Federal Circuit has exclusive nationwide jurisdiction over appeals from all district court cases arising under the patent laws pursuant to 28 U.S.C. § 1295. Therefore, all appeals of claim construction issues are to the Federal Circuit.

3. *See* Kimberly A. Moore, *Forum Shopping in Patent Cases: Does Geographic Choice Affect Innovation?*, 79 N.C. L. REV. 889, 993 (2001) [hereinafter *Forum Shopping*] (demonstrating that although patent cases represent only 0.57% of the annual civil caseload, they are 9.4% of what the courts deem complex cases requiring twenty days or more of trial).

expensive[4] patent litigation based on their frequently erroneous claim construction.

Second, the 33% error rate for claim construction creates doubt about the abilities of district court judges to adjudicate complex technical patent cases. Although there has been considerable commentary criticizing the practical limitations of juries adjudicating patent cases,[5] little attention has been given to whether district court judges are the appropriate alternative.[6] Can district court judges determine the meaning of patent terms to one of skill in the art when the terms are "memory selection second switch means"[7] or "contact arrays being adapted to interchangeably connect"?[8] What about seemingly simple patent claim terms such as "between", "a", or "when"?[9] Are

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4. *See* AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION, REPORT OF ECONOMIC SURVEY 2001 84–85 (2001) (an average suit will cost each party in excess of a million dollars in transaction costs).

5. *See* Kimberly A. Moore, *Judge, Juries and Patent Cases — An Empirical Peek Inside the Black Box*, 99 MICH. L. REV. 365, 367–69 (2000). This article presents empirical research substantiating concerns that jury decision-making in patent cases may be based on bias or emotion rather than rationality or merit. *See id.* Utilizing a database containing every patent trial from 1983–1999, the author contends that juries are pro-patentee, less likely than judges to invalidate a patent, more likely than judges to find infringement, and more likely than judges to find an infringer willful. *See id.* at 380, 386–90. Although jury decision-making lacks sufficient transparency to ascertain flaws due to incompetence because of "black box" verdicts and deferential standards of review, the empirical results indicate that juries do not dissect issues, but rather decide cases all-or-nothing. *Id.* at 368, 396, 402–04*; see also* Rick Raber*, Jury Cases on Patent Infringement on Trial*, CHICAGO TRIB., June 12, 1995, at 6 ("Corporate defendants and patent lawyers have long griped that intellectual property litigation is too complex to leave to plumbers, housewives, mailmen and music teachers."); Richard B. Schmitt, *Court May Consider Some Limits on Juries' Role in Patent Lawsuits*, WALL ST. J., Feb. 18, 1994, at B6 (quoting patent attorney Donald Dunner as saying: "Give [jurors] a complicated biotechnology case or one involving lasers or computers, and their eyes glaze over."); J. Robert Chambers, *Jury Trials in Patent Cases: The Uncertain Course of the Federal Circuit*, 13 AIPLA Q.J. 361, 370–71 (1985) (arguing that patent cases are too complex for juries to understand).

6. *See* Markman v. Westview Instruments, Inc., 52 F.3d 967, 993 (Fed. Cir. 1995) (Mayer, C.J. concurring) ("there is simply no reason to believe that judges are any more qualified than juries to resolve the complex technical issues often present in patent cases"); *see also* Howard T. Markey, *On Simplifying Patent Trials*, 116 F.R.D. 369, 372 (1987) (arguing that there is no empirical evidence substantiating that trial judges will reach more correct judgments than juries in patent cases).

7. *See infra* note 46 and accompanying text.

8. *See infra* note 47 and accompanying text.

9. *See infra* notes 48–50 and accompanying text.

district court judges capable of accurately resolving patent cases or are they just the lesser of two evils?[10]

I analyzed this issue by collecting a database of all claim construction appeals to the Federal Circuit from 1996 to 2000. Claim construction, which is decided exclusively by the district court judge[11] and reviewed *de novo* by the Federal Circuit,[12] provides an opportunity to assess the abilities of district court judges to interpret technical terms in a patent.[13] Such empirical evidence provides insight into the competency of judges to resolve technically sophisticated patent cases and the consequences of inaccurate decision making. This database also allows me to assess the utility and practicality of the new claim construction process and suggest some avenues for improving patent litigation.

Part II of this Article explains how patent claims are construed by district court judges and reviewed by the Federal Circuit. Part III lays out the empirical study performed and its results. Part IV analyzes these results and explains how the present means of adjudicating patent cases unnecessarily prolongs litigation and discourages settlement. It questions the process of having district court judges decide complex issues of patent infringement and validity based on their claim constructions when these constructions prove incorrect in 33% of the cases. The Article concludes that the most efficient way to balance the need for certainty and accuracy in patent claim scope determinations is not with increased deference to inaccurate district court decisions or by waiting for improvement in the quality of the district court decisions, but rather by providing expedited appeal of these issues to the Federal Circuit in limited circumstances.

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10. In 1999, I conducted a survey at the annual conference of the Association of Corporate Patent Counsels. On a scale of 1–10 (with 10 being very confident), respondents confidence in the jury's ability to understand the technology in patent cases was only 3.7. One Chief Patent Counsel with more than thirty years experience wrote "JURIES JUST PLAIN CAN'T DECIDE PATENT CASES PERIOD. . . . THIS IS HOPELESS." Interestingly, the respondents did not have much more confidence in the ability of district court judges to understand the technology in patent cases. On a scale of 1–10, their confidence in judges was only 5.6.

11. *See generally* Markman v. Westview Instruments, Inc., 517 U.S. 370 (1996).

12. *See* Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1454 (Fed. Cir. 1998) (en banc).

13. What is actually being tested is whether district court judges are capable of construing patent claims in the manner desired by the Federal Circuit. Whether this is a test of accuracy or competency is another question I consider. *See infra* notes 69–99 and accompanying text.

II. HOW CLAIMS ARE CONSTRUED

Although juries are demanded in most patent cases, usually by the patent holder, district court judges play an increasingly significant and often definitive role in patent cases because they are now charged with the task of defining the patent claim terms. In *Markman v. Westview Instruments, Inc.,* the U.S. Supreme Court held that there was no Seventh Amendment right to a jury trial on the issue of patent claim construction.[14] Employing a functional approach, the Court determined that judges, with their training and experience, "are better suited" than juries to interpret patent claims.[15] While it may be true that educated judges familiar with legal issues are better than lay juries, the question remains whether judges can interpret technical language in patent claims.[16]

Patent claims define the metes and bounds of an inventor's property rights. Defining the meaning and scope of the claim terms is the first step in any patent infringement analysis.[17] The patent claim terms must be defined in order to determine what behavior constitutes patent infringement ex ante by a competitor trying to decide what zone of competition is permitted by the patent or ex post by the court trying to determine whether the competitor infringed. Patent claim terms are not construed in a vacuum. In interpreting patent claim terms, the district court judge must consider the intrinsic evidence:[18] the claims, the specification,[19] and the patent's prosecution history.[20] This appears

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14. 517 U.S. at 388–91.

15. *Id.* at 388–89.

16. *Cf.* Autogiro Co. of Am. v. United States, 384 F.2d 391, 396 (Ct. Cl. 1967) ("The very nature of words would make a clear and unambiguous [patent] claim a rare occurrence.").

17. *See* Dow Chem. Co. v. United States, 226 F.3d 1334, 1338 (Fed. Cir. 2000); KCJ Corp. v. Kinetic Concepts, Inc., 223 F.3d 1351, 1355 (Fed. Cir. 2000).

18. *See* Biovail Corp. Int'l v. Andrx Pharms., Inc., 239 F.3d 1297, 1300 (Fed. Cir. 2001); DeMarini Sports, Inc. v. Worth, Inc., 239 F.3d 1314, 1322 (Fed. Cir. 2001).

19. The specification, which includes the written description of the claimed invention and its preferred embodiment, must be consulted in construing a claim term because it may contain a definition for terms used in the patent claims. *See, e.g.*, Mycogen Plant Sci. v. Monsanto Co., 243 F.3d 1316, 1327 (Fed. Cir. 2001) ("[A] patentee is free to be his own lexicographer, so long as the special definition of a term is made explicit in the patent specification or file history.").

20. The patent's prosecution history is a written record of the exchanges between the inventor and the Patent & Trademark Office (PTO) during the patent acquisition process. During prosecution of the patent, the inventor may have provided the examiner with definitions of claim terms or may have limited the meaning of claim terms in order to secure allowance of the patent. Arguments regarding claim terms or

to be straightforward legal construction, like statutory construction, which district court judges do all the time.[21]

The patent claim terms, however, are interpreted not by a "reasonable man," a standard with which most judges are familiar, but rather by "one of ordinary skill in the art" to which the patent pertains.[22] Patent claim terms are to be given their plain and ordinary meaning to one of skill in the art unless it appears from the intrinsic evidence that the inventor intended the terms to have some special meaning.[23] Hence, the district court judge must attempt to step in the shoes of a person skilled in the technical field of the patented invention and determine from that vantage point what the terminology in the patent claims means.[24] For example, in *Robotic Vision Systems, Inc. v. View Engineering, Inc.*, the district court judge determined that one of skill in the art of the invention was an engineer with an integrated circuits background.[25] The judge then had to *pretend* to be a person with those skills and degrees to interpret as they would the terms "providing . . . fiducials," "correlated . . . heights," "disposing . . . in a prearranged pattern," and "restricting . . . to a predetermined range of heights."[26]

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amendments made to the claims should be considered by the judge when interpreting claim language. *See, e.g.*, Elkay Mfg. Co. v. Ebco Mfg. Co., 192 F.3d 973, 979 (Fed. Cir. 1999) (stating that the prosecution history can impact how claim terminology should be construed if the patentee "relinquished potential claim construction in an amendment to the claim or in an argument to overcome or distinguish a reference").

21. In fact, the Federal Circuit analogized claim construction to statutory interpretation in its *en banc* decision in *Markman*. *See* Markman v. Westview Instruments, Inc., 52 F.3d 967, 987 (Fed. Cir. 1995). The court suggested that like claim construction, statutory interpretation is a question of law for the court and statutes are interpreted by reference to the public record (legislative history). *See id.*

22. *See* Hoechst Celanese Corp. v. BP Chems. Ltd., 78 F.3d 1575, 1578 (Fed. Cir. 1996) (holding that the court construes a claim term as "persons experienced in the field of invention").

23. *See* Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996) ("Although words in a claim are generally given their ordinary and customary meaning, a patentee may choose to be his own lexicographer and use terms in a manner other than their ordinary meaning, as long as the special definition is clearly stated in the patent specification or file history.").

24. *See* Hockerson-Halberstadt, Inc. v. Avia Group Int'l, Inc., 222 F.3d 951, 955 (Fed. Cir. 2000).

25. 189 F.3d 1370, 1373 (Fed. Cir. 1999) (stating that the district court judge found that one of ordinary skill in the art is "(1) a person with a B.S. degree in engineering, mathematics, or a technical discipline; (2) an applications engineer; or (3) a person with knowledge based on experience equivalent to (1) or (2)").

26. *Id.* at 1375 (holding that the district court judge's interpretation of these phrases was correct).

Since few district court judges are one of ordinary skill in the technology of the invention, the court can accept extrinsic evidence "to enhance its understanding of the technology."[27] Extrinsic evidence can be dictionary definitions, learned treatises, expert testimony, or anything else the court deems helpful to its task.[28] The evidence and argument that the district court judge hears regarding claim construction is usually presented either in summary judgment briefing or in a mini-trial called a *Markman* hearing. The district court judge has broad discretion over whether to have a *Markman* hearing,[29] when to have this hearing,[30] and what evidence to admit. The Federal Circuit has provided little guidance regarding how, when, and whether to conduct *Markman* hearings.[31]

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27. *DeMarini Sports*, 239 F.3d at 1323. Extrinsic evidence may not be used to vary the plain meaning of a claim term. *See Vitronics Corp.*, 90 F.3d at 1584.

28. *See Vitronics Corp.*, 90 F.3d at 1584.

29. Some district court judges permit only attorney briefing on the issue of claim construction, others will permit attorney argument on claim construction, and still others will hold *Markman* hearings with the introduction of expert witness testimony and other evidence. *See* Elf Atochem N. Am. Inc. v. Libbey-Owens-Ford Co., 894 F. Supp. 844, 850 (D. Del. 1995) ("The court can attempt to resolve these disputes on the paper record. Second, the court can hold a trial to resolve the disputes. Finally, the court can wait until trial and attempt to resolve claim disputes before the evening before the jury must be instructed.").

30. The district court judge has discretion to decide at what stage in the litigation she will resolve claim construction disputes. It may be done early in the litigation or after the trial has begun. Early claim construction is advantageous in that it may resolve infringement issues entirely or it may encourage settlement between the parties. *Cf.* William F. Lee & Anita K. Krug, *Still Adjusting to* Markman*: A Prescription for the Timing of Claim Construction Hearings*, 13 HARV. J.L. & TECH. 55, 57 (1999) (arguing that the optimal time for the claim construction hearing is "after discovery but before the trial begins — specifically, at the time of the court's consideration of summary judgment motions").

31. *See* Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc., 200 F.3d 795, 803 (Fed. Cir. 1999) ("AS&E argues that claim construction should be done no earlier than the end of discovery, and urges this court to adopt a uniform rule to this effect. We see no need for such a rule, for the stage at which the claims are construed may vary with the issues, their complexity, the potentially dispositive nature of the construction, and other considerations of the particular case."); Sofamor Danek Group, Inc. v. DePuy-Motech, Inc., 74 F.3d 1216, 1221 (Fed. Cir. 1996) (holding that the timing of the *Markman* procedures is at the discretion of the district court); *see also* Robert C. Weiss et al., *Markman Practice, Procedure & Tactics*, *in* PATENT LITIGATION 2000, at 117, 172 (PLI Patents, Copyrights, Trademarks and Literary Property Course, Handbook Series No. 619, 2000) ("[T]he Federal Circuit has not provided any clear guidance as to the timing, procedures and evidentiary aspects of claim construction."); Janice M. Mueller, *Taking "Inventory" After Markman: The Supreme Court Confirms A New Era In Patent Litigation*, THE LAW WORKS 6 (1996) (stating that the Federal Circuit has provided little guidance on claim construction in the past).

Determining the scope of the patent claims is the most important issue in a patent infringement suit. How the judge construes the patent claims is often dispositive of the infringement and validity analysis.[32] After the judge construes the patent claims, if there is any remaining issue regarding infringement, it is determined by the jury if one was demanded.[33]

Following the Supreme Court's decision in *Markman* that judges are better equipped than juries to decide claim construction, the Federal Circuit held that claim construction is a question of law and therefore subject to *de novo* review.[34] Because district court judges are required to provide detailed opinions articulating the basis for their findings of fact and conclusions of law,[35] examining the outcomes of appealed claim construction issues provides an excellent opportunity to ascertain how accurately the district court judges construe claims.

III. JUDGING THE JUDGES: AN EMPIRICAL STUDY OF PATENT CLAIM INTERPRETATIONS

A. The Data Collected

I collected a database of all post-*Markman* Federal Circuit cases addressing claim construction. This database includes every Federal Circuit case, whether published, unpublished, or summarily affirmed (Rule 36), in which claim construction issues were appealed.[36] The

32. Markman v. Westview Instruments, Inc., 52 F.3d 967, 989 (Fed. Cir. 1995) (Mayer, C.J., concurring) ("[T]o decide what the claims mean is nearly always to decide the case.").

33. *See* Networld, LLC v. Centraal Corp., 242 F.3d 1347, 1350 (Fed. Cir. 2001).

34. *See* Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1454 (Fed. Cir. 1998) (en banc). The Supreme Court actually described claim construction as a "mongrel practice." Markman, 517 U.S. at 378.

35. Fed. R. Civ. P. 52.

36. I conducted a search on Westlaw using the terms: patent & claim /s interp! or constru! The search retrieved 515 cases. Each one was examined to determine whether the district court judge's claim construction was being appealed to the Federal Circuit. I also collected the data on all Rule 36 summary affirmances that occurred during this same time period in order to ascertain whether the issue affirmed was claim construction. Pursuant to Rule 36 of the Federal Circuit Rules of Procedure, the court can summarily affirm without opinion a district court judgment. There were 161 Rule 36 affirmances during the time period of this study. After obtaining the appeal briefs in every one of these cases, I discovered that seventy-eight cases did appeal district court claim constructions. After eliminating cases that did not address claim construction, this database contained 323 cases.

database includes all 323 claim construction cases appealed to the Federal Circuit from April 23, 1996 (the day the Supreme Court issued the *Markman* decision) through December 31, 2000.[37] In these 323 cases, 496 separate claim construction issues were appealed.[38] This is the entire population of claim construction cases that were appealed, not a sample study that chooses a limited number of appeals. The remainder of this Part presents descriptive statistics about the population of claim construction appeals and the voting patterns of individual Federal Circuit judges. It also describes the regression models performed that test the relationship between the defined variables such as the impact a technical background has on the likelihood of a Federal Circuit judge to reverse a district court claim construction.[39]

B. Limitations of the Data

There are several deficiencies in the data which must be acknowledged. First, this database only includes appealed claim construction decisions by district court judges. Undoubtedly, there have been many claim terms construed by district court judges that were not appealed because either the case settled or the parties simply chose not to appeal. There are two predictions that could be made about the likely outcome of the bulk of unappealed claim construction decisions. The first prediction is that the affirmance rate would be higher if all claim construction issues were appealed because the parties only appeal issues when they believe the judge was wrong. If this were true, the construction issues that were not appealed were more likely correct decisions by the district court judges. This prediction implies

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37. Since this is a population study rather than a sample study, there is no need to perform statistical tests to evaluate the significance of the data. All of the empirical results presented are "statistically significant."

38. In many cases, more than one term construed by the district court judge was appealed to the Federal Circuit.

39. For each of the Federal Circuit decisions in the study, I collected the following information: party names; date of the Federal Circuit decision; district court where the case originated; claim terms appealed; the Federal Circuit judges who decided the appeal; the Federal Circuit judge who authored the opinion; whether the Federal Circuit judges who decided the case were appointed by Democratic or Republican presidents; whether the Federal Circuit judges who decided the case have a technical background or prior patent experience; whether the Federal Circuit agreed with or disagreed with the district court's claim construction; whether the Federal Circuit's decision on claim construction impacted the resolution of the case; and whether the appealed claim construction related to a means-plus-function term.

that district court judges are, in fact, better at construing claim terms than the empirical evidence presented herein suggests.

The second prediction, based on economic theory, suggests that the cases that are appealed are most likely the close cases in which the parties are more likely to disagree on predicted outcome.[40] The outlier cases where the judge got the claim construction clearly right or clearly wrong should likely settle to avoid transaction costs.[41] Under this theory, the unappealed claim construction decisions are not likely to substantially impact affirmance rates found in the empirical evidence presented herein. The selection effect theory, however, appears flawed when applied to appellate outcome statistics. Consistently elevated affirmance rates [42] in the appellate courts suggests that unless there is consistent deviation from the underlying assumptions of this economic model,[43] the model is not successful in predicting the selection of cases which are appealed. This may be attributable to the fact that appeal transaction costs are relatively low compared to the trial costs, therefore we expect more "Hail Mary" appeals.[44]

Although these predictions both suggest that appealed claim construction decisions may not be a random sample of all claim construction disputes, the empirical results still provide insight into the abilities of the district court judges and the practices of the Federal Circuit judges in reviewing these decisions.

Finally, there is a question regarding whether the Federal Circuit's *de novo* decisions on claim construction test the *accuracy* of district court judges' claim construction. This issue is discussed in more detail below.

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40. *See* George L. Priest & Benjamin Klein, *The Selection of Disputes for Litigation*, 13 J. LEGAL STUD. 1, 4, 16 (1984).

41. *See id.* at 4.

42. *See, e.g.*, *infra* Table 1 and accompanying text (documenting the Federal Circuit's average affirmance rate of 81% over the last five years).

43. Commentators have argued that deviations from the 50/50 prediction can be explained by deviations from the underlying assumptions. *See* Bruce H. Kobayashi, *Case Selection, External Effects, and the Trial Settlement Decision*, DISPUTE RESOLUTION: BRIDGING THE SETTLEMENT GAP 17, 27 (David A. Anderson ed. 1996); Daniel Kessler et al., *Explaining Deviations from the Fifty Percent Rule,* 25 J. LEGAL STUD. 233, 236–42 (1996) (concluding that the win rate is closer to 50% among cases that conform more closely to the underlying assumptions of the Priest/Klein model).

44. *See* Kevin M. Clermont & Theodore Eisenberg, *Appeal From Jury or Judge Trial: Defendants' Advantage*, 3 AM. L. & ECON. REV. 125, 130–34 (2001) (arguing that the 80% appellate affirmance rate suggests that the law should consider reforms aimed at discouraging appeals).

C. The Empirical Results

1. Claim Construction of the District Court Judges

> Frankly, I don't know why I'm so excited about trying to bring this thing [patent suit] to closure. It goes to the Federal Circuit afterwards. You know, it's hard to deal with things that are ultimately resolved by people wearing propeller hats. But we'll just have to see what happens when we give it to them. I could say that with impunity because they've reversed everything I've ever done, so I expect fully they'll reverse this, too.
>
> Judge Samuel B. Kent[45]

As Figure 1 shows, according to the Federal Circuit, the district court claim constructions were wrong 28% of the time. District court judges struggled with technically complex terms such as "memory selection second switch means,"[46] and "contact arrays being adapted to interchangeably connect"[47] and seemingly simple terms such as "between",[48] "a",[49] and "when."[50] Since many appeals raise more than one claim construction issue, Figure 2 presents district court errors by case rather than by issue. District court judges decided at least one claim construction issue wrong in 33% of all the appealed patent cases.

Perhaps the most complicated claim construction that must be

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45. O.I. Corp. v. Tekmar Co., No. 95-CV-113 (S.D. Tex. June 17, 1996). Interestingly, the "propeller hats" at the Federal Circuit affirmed the judge this time. *See* O.I. Corp. v. Tekmar Co., 115 F.3d 1576 (Fed. Cir. 1997).

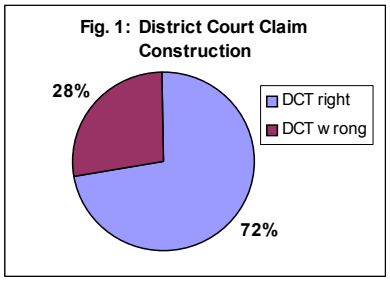
46. Overhead Door Corp. v. Chamberlain Group, Inc., 194 F.3d 1261, 1271–73 (Fed. Cir. 1999) (holding that the district court judge's construction of the claim term "memory selection second switch means" was incorrect).

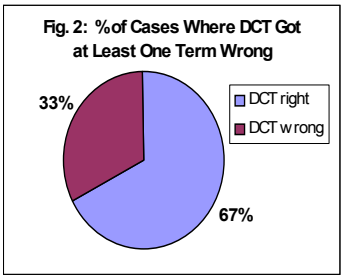
47. Berg Tech., Inc. v. Foxconn Int'l, Inc., 185 F.3d 884 (Fed. Cir. 1999) (holding that the district court judge's construction of the claim term "contact arrays being adapted to interchangeably connect" was incorrect).

48. Foster v. Hallco Mfg. Co., 119 F.3d 16 (Fed. Cir. 1997) (holding the district court judge's construction of "between" was inaccurate).

49. KCJ Corp. v. Kinetic Concepts, Inc., 223 F.3d 1351, 1355–56 (Fed. Cir. 2000) (holding that the term "a" should be construed as "at least one" and not limited to a single element).

50. Zi Corp. of Canada v. Tegic Communications Inc., 243 F.3d 564 (Fed. Cir. 2000) (holding that the district court judge's construction of "when" was too narrow).





performed by district court judges is the construction of terms written in means-plus-function format.[51] The patent statute permits patent holders to use functional rather than structural language in claiming their inventions.[52] As a matter of claim construction, judges must first determine whether a particular term uses means-plus-function language.[53] If the term employs means-plus-function language, the judge must identify the function for that claim element and determine what structure in the specification corresponds to that function.[54] The district court judges erred in construing means-plus-function language clauses in 33% of the cases in the study (31 of the 93 cases in which means-plus-function language appeared).

In this study, 19% of the claim terms appealed raised an issue regarding means-plus-function language (93 cases). In 15% of the means-plus function cases (14 cases), the district court and the Federal Circuit disagreed over whether a claim term employed means-plus-function language. These figures indicate that district court judges have difficulty determining whether a claim term employs means-plus-

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51. *See, e.g.*, Rudolph P. Hofmann, Jr. & Edward P. Heller, III, *The Rosetta Stone for the Doctrines of Means-Plus-Function Patent Claims*, 23 RUTGERS COMPUTER & TECH. L.J. 227, 232–33 (1997) (lamenting the difficulty of using means-plus-function claim language).

52. *See* 35 U.S.C. § 112 ¶ 6. A means-plus-function claim element "shall be construed to cover the corresponding structure, materials, or acts described in the specification and equivalents thereof." *Id.*

53. Wenger Mfg., Inc. v. Coating Mach. Sys., Inc., 239 F.3d 1225, 1231 (Fed. Cir. 2001) ("Whether certain claim language invokes 35 U.S.C. § 112, ¶ 6 is an exercise of claim construction and is therefore a question of law, reviewable *de novo* by this court.") (quoting Personalized Media Communications v. Int'l Trade Comm'n, 161 F.3d 696, 702 (Fed. Cir. 1998)).

54. Globetrotter Software, Inc. v. Elan Computer Group, Inc., 236 F.3d 1363, 1367–68 (Fed. Cir. 2001) ("The determination of the corresponding structure of a means-plus-function claim is a determination of the meaning of the 'means' term, and is a matter of claim construction.").

function language at all.[55] In addition, the district court judges interpreted means-plus-function clauses incorrectly, according to the Federal Circuit, in 30% of the cases (28 times). Ultimately, the district court judges erred in one or more aspects of the means-plus-function clause construction in 33% of all means-plus-function term appeals. In light of the complexity attendant the construction of means-plus-function elements, it is not surprising that the error rate is higher for these terms (33%) than other claim terms appealed (28%).

If the Federal Circuit disagrees with the district court's claim construction, it may adopt the construction advocated by the appealing party (the one rejected by the district court), or it could proffer its own claim construction never before considered by either party. After deciding the "true" meaning of the appealed claim terms, the Federal Circuit then has three options: (1) affirm the district court's judgment if the incorrect claim construction did not affect outcome; (2) reverse the district court's judgment if the new claim construction would result in the opposite outcome; or (3) vacate the judgment if the new claim construction raises factual issues with regard to infringement that necessitate further action by the district court.

In 81% of the cases where the district court judge's claim construction was incorrect, the Federal Circuit reversed or vacated the decision. The consequences of flawed claim construction can be quite severe. For example, in *Exxon Chemical Patents, Inc. v. Lubrizol Corp.*,[56] the district court accepted Exxon's proposed claim construction. After a jury trial on infringement, Exxon was awarded $48,000,000 in damages which was doubled for willfulness, $8,700,000 in interest and $23,700,000 in attorney fees.[57] On appeal, the Federal Circuit rejected both parties' proposed claim constructions and instead proffered its own construction of the disputed term. Instead of remanding the case for a new trial and for the admission of evidence on

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55. Although without empirical support, others have argued that accurate construction of means-plus-function terms in patent claims is difficult to accomplish. *See, e.g.*, Yoncha L. Kundupoglu, *The Law of Means-Plus-Function Language*, 28 AIPLA Q.J. 39, 46 (2000) ("[T]he [means-plus-function construction] analysis has become so convoluted and complex that the outcomes of several recent cases appear to be in conflict with each other, making the interpretation of a putative means-plus-function limitation a risky venture."); William F. Lee & Eugene M. Paige, *Means Plus and Step Plus Function Claims: Do We Only Know Them When We See Them?*, 80 J.P.T.O.S. 251, 252 (1998) ("[T]he law of what constitutes a means-plus-function claim is fraught with uncertainty . . . .").

56. 64 F.3d 1553 (Fed. Cir. 1995).

57. *See id.*

the new claim construction, the Federal Circuit reversed the case outright.[58] Critical of this procedure by the majority, Judge Nies in her dissent commented:

> By advocating a different interpretation of the claim *sua sponte*, the majority required Exxon to litigate during trial not only its opponent's position but also the unknowable position of the appellate court. Exxon has been deprived of a jury trial on an unasserted and untried theory. The majority decision comes out of the blue.[59]

Errors in district court claim construction have a serious impact on outcome. Since the Federal Circuit disagrees with one in three claim constructions by district courts and most of these errors result in reversal, a high degree of uncertainty regarding outcome exists until the appeal is decided.

The results show an overall case reversal/vacate rate of 27% in the database directly attributable to errors in district court claim construction. This rate includes all cases where the district court properly and improperly construed claims. This means that more than one in four appealed patent cases involving claim construction result in overturning the judgment reached by the district court solely for claim construction reasons.

This is a high error rate as compared to overall reversal rates from the Federal Circuit, which are contained in Table 1.[60] Because Table 1 includes the outcome of all appeals from the district courts during the years specified, it includes the cases reversed due to errors in the district court's claim construction. If you removed the claim construction appeals (with their 27% reversal/vacate rate) from other patent appeals the percentages in Table 1 would be significantly lower still.

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58. In another case, after the district court construed a patent claim favorable to the patentee, the infringer stipulated to infringement. Accordingly, no infringement evidence at all was introduced at the trial court. On appeal, the Federal Circuit reversed the claim construction and held that as a matter of law there was no infringement. *See* Durel Corp. v. Osram Sylvania, Inc., 256 F.3d 1298 (Fed. Cir. 2001).

59. 64 F.3d at 1569 (Nies, J., dissenting).

60. These reversal rates come directly from the Federal Circuit's reporting to the Administrative Office of the Courts. Annual Report of the Director of the Administrative Office of the United States Courts, Table B-8 (1995–2000).

Table 1 — Overall Federal Circuit Reversal Rates

YEAR	% of District Court Patent Cases Reversed
2000	16
1999	21
1998	19
1997	27
1996	13
1995	17

This result is not surprising because more deferential standards of review generally apply to other patent law issues. Fact findings by a jury are reviewed for substantial evidence.[61] Appellate review of jury verdicts is made more difficult by the black box nature of the jury verdicts. Juries do not have to articulate the basis and reasoning behind their conclusions. In the absence of such analysis it is difficult, if not impossible, for the Federal Circuit to scrutinize these verdicts on appeal. Fact findings by a judge are reviewed to determine if they are clearly erroneous.[62] Only legal questions decided by a judge or jury are reviewed *de novo*,[63] and there are not many pure questions of law.[64]

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61. *See, e.g.*, Upjohn Co. v. Mova Pharm. Corp., 225 F.3d 1306, 1310 (Fed. Cir. 2000) (holding that jury fact findings are reviewed to ascertain whether they are supported by substantial evidence).

62. *See, e.g.*, Weatherchem Corp. v. J.L. Clark, Inc., 163 F.3d 1326, 1332 (Fed. Cir. 1998) (holding that fact findings made in a bench trial are reviewed for clear error).

63. *See, e.g.*, Pioneer Magnetics, Inc. v. Micro Linear Corp., 238 F.3d 1341, 1344 (Fed. Cir. 2001) (holding that the legal question of prosecution history estoppel is subject to *de novo* review); Union Pacific Resources Co. v. Chesapeake Energy Corp., 236 F.3d 684, 692 (Fed. Cir. 2001) (holding that claim indefiniteness, a question of law, is reviewed *de novo*).

64. In fact, a jury can decide questions of law such as obviousness based upon several underlying factual determinations that include scope and content of the prior art, comparing the claims to the prior art, level of ordinary skill in the art, and objective considerations such as commercial success or failure of others. The Federal Circuit reviews such jury determinations by re-examining the record and presuming that the jury made all findings of fact consistent with its ultimate verdict on the legal question. *See, e.g.*, Newell Cos. v. Kenney Mfg. Co., 864 F.2d 757, 765 (Fed. Cir. 1988) ("Judges must accept the factual findings, presumed from a favorable jury verdict, which are supported

As part of another empirical project, I collected every patent case that went to trial from 1983–1999.[65] In that study, I examined the Federal Circuit reversal rates of decisions by judges and juries across a variety of patent issues.[66] These results are reproduced below in Table 2. As Table 2 shows, appellate affirmance rates for issues that are not pure questions of law, and therefore subject to deference on appeal, are affirmed more often than claim construction decisions. If these decisions were subject to less deference by the Federal Circuit, it is likely their affirmance rates would decrease as well. For factual determinations, however, which are often based on witness credibility, the Federal Circuit is not well-situated to review these issues without deference.[67]

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under the substantial evidence/reasonable juror standard."). Hence, *de novo* review under these circumstances is not really *de novo*.

65. *See generally* Moore, *supra* note 5.

66. *See id.* at 397, 399.

67. Prior to the Federal Circuit's *en banc* ruling that claim construction would be reviewed *de novo*, several Federal Circuit judges suggested that claim construction did require fact finding by the district court judge on issues like credibility of expert testimony. *See, e.g.*, Fromson v. Anitec Printing Plates, Inc., 132 F.3d 1437, 1447 (Fed. Cir. 1997) (Mayer, C.J., concurring) ("[T]he trial judge has to make findings of fact as he decides the meaning to ascribe to the patent.").

Table 2 — Percentage and Number of Appealed Issues Affirmed By Federal Circuit[68]

	All Decisions	Jury	Judge
All Issues Affirmed	78% (1261)	78% (490)	78% (771)
Validity Affirmed	78% (443)	78% (166)	77% (277)
Infringement Affirmed	80% (500)	77% (225)	82% (275)
Enforceability Affirmed	76% (172)	75% (44)	76% (128)
Willfulness Affirmed	85% (98)	94% (32)	80% (66)

As this empirical evidence shows, the 33% reversal rate for claim construction is higher than the reversal rate for other issues. One plausible explanation is that district court judges are better at deciding infringement, validity, enforceability, and willfulness because they have been doing it longer. District court judges struggle with claim construction because they are new to the task. This suggests that district court judges may become more accurate at claim construction with time. More likely the difference in affirmation rates are due to the different standards of review applicable to the issues.

2. Claim Construction of the Federal Circuit Judges

> *We are not final because we are infallible, but we are infallible only because we are final.*[69]

Throughout the Article, I have been discussing the Federal Circuit's review of the district court judges as a determination of correctness or accuracy. In short, I have been assuming that the Federal Circuit is pronouncing the correct construction for the patent claims, and if the district court judge's construction was not the same, it must be in

68. *See* Moore, *supra* note 5, at 397, 399.

69. Brown v. Allen, 344 U.S. 443, 540 (1953) (Jackson, J., concurring) (referring to the Supreme Court).

error. This belief is premised on the frequency with which the Federal Circuit judges confront these issues. It is a common misconception that the Federal Circuit judges must themselves be specialists with technical backgrounds to be appointed to the court.[70] Contrary to this perception, not all Federal Circuit judges have a technical background, nor are all of the judges specialists in patent law prior to being appointed to the bench. At present, only four of the twelve active Federal Circuit judges have technical backgrounds.[71] The Federal Circuit judges do, however, generally hire law clerks with various technical backgrounds to assist them with their cases.[72] Is it possible that it is the Federal Circuit judges' constructions that are in error and the district court judges are actually correct?

In the case *CVI/Beta Ventures, Inc. v. Custom Optical Frames, Inc. ("CVI I")*, the Federal Circuit, in a panel consisting of Judges Archer, Newman, and Michel, reviewed a grant of preliminary injunction by the U.S. District Court for the District of Maryland.[73] The district court construed the claim term "greater than 3% elasticity" to mean that the eyeglass frame "will recover at least 3% of its original shape after being subject to strain, rather than meaning it must show complete recovery after a strain of greater than 3%."[74] The three judge panel of the Federal Circuit unanimously affirmed this claim construction citing the patent's specification, drawings, and prosecution history as supporting the fact that CVI/Beta did not limit its claim to complete recovery. The Federal Circuit acknowledged that dictionary definitions supported an interpretation of elastic as complete recovery and that Figures 2F and 2H of the patent showed complete recovery. The court concluded, however, that the specification and drawings did not support the complete recovery construction. The Court pointed to the embodiment in Figure 2G as an example of where the phrase "elasticity" is not used in the context of complete recovery.

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70. *See, e.g.*, Matt Krantz*, Computer & Technology Patent Suits Try Patience Of High-Tech Companies,* INVESTOR'S BUS. DAILY, Dec. 9, 1996, at A6, *available at* 1996 WL 11863987 ("The U.S. Court of Appeals for the Federal Circuit in Washington, D.C., is known as the Supreme Court of Patents. It's manned by three judges with both legal and scientific training.").

71. Judges Lourie, Newman, Gajarsa, and Linn have technical backgrounds. *See* U.S. Court of Appeals for the Federal Circuit, Judicial Biographies, *available at* http://www.fedcir.gov/judgbios.html (last visited Sept. 29, 2001).

72. *See* Jonathan Ringel, *Federal Circuit's Scientific Method: Coveted Judicial Clerkships Draw Pool of Candidates with Technical Backgrounds to Match the Court's Docket*, LEGAL TIMES, Nov. 6, 2000, at 10 (noting that twenty-five of thirty-six law clerks from the Federal Circuit had a science or engineering background).

73. 92 F.3d 1203 (Fed. Cir. 1996).

74. *Id.*

The Federal Circuit had a second occasion to review a judgment regarding this same eyeglass frame patent. In this Eastern District of New York case, *CVI/Beta Ventures, Inc. v. Tura LP (CVI II)*,[75] CVI/Beta sued a different defendant for infringing the same eyeglass frame patent. A three judge panel consisting of Judges Schall, Michel, and Friedman, unanimously held that this district court judge erred in construing the term "elasticity." The district court judge had rejected the complete recovery interpretation advocated by the defendants and instead interpreted the term "greater than 3% elasticity" as requiring only that the frame spring back by at least 3%.[76] This is the exact claim construction the Federal Circuit had affirmed in *CVI I*. This time the Federal Circuit rejected its own earlier construction and held that the term "elasticity" required complete recovery of the frame.[77] This construction was proper, according to the court, in light of the patent's prosecution history, specification, and drawings. It cited Figures 2F and 2H, which showed complete recovery, and Figure 2G, which showed recovery to within 3–4%.[78]

The Federal Circuit in *CVI I* held that the term "greater than 3% elasticity" meant that the frame will recover at least 3% of its original shape after being subject to strain and rejected the assertion that this term meant "complete recovery after strain." In *CVI II*, a district court adopted this very construction, and the case was tried. On appeal, the Federal Circuit, relying on the exact same patent specification, drawings, and prosecution history, effectively reversed itself holding that the term "greater than 3% elasticity" meant complete recovery and rejected the construction that it will recover at least 3% of its original shape. In both cases, the Federal Circuit construction was based entirely on intrinsic evidence (the patent claims, specification, and prosecution history).[79] In both cases, the exact same intrinsic evidence was before the court. Only in a footnote does the Federal Circuit even mention that it previously construed this same patent claim language in a contrary manner:

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75. CVI/Beta Ventures, Inc. v. Tura LP, 112 F.3d 1146 (Fed. Cir. 1997).

76. *Id.* at 1151–52.

77. *Id.* at 1157–58.

78. *See id.* at 1154–55.

79. *See id.* at 1157 n.6 ("We view this as a case in which reliance on extrinsic evidence (e.g., expert testimony) is not necessary.").

> In *CVI/Beta Ventures, Inc. v. Custom Optical Frames, Inc.,* . . . a different panel of this court, in a non-precedential opinion, upheld the grant of a preliminary injunction against infringement of the '112 and '955 patents. In so doing, the panel affirmed an interpretation of the 3% elasticity limitation which did not restrict the claim to complete recovery. In its opinion, the panel stated that it could not conclude "in the context of the preliminary injunction proceeding that the district court erred in rejecting Custom Optical's proffered claim construction." The panel noted, as well, that the parties would have the opportunity at the merits stage to expand their arguments and to present any additional arguments. In this appeal, we review a different trial court's final claim construction as part of our review of the judgment on infringement. Therefore, unlike the earlier appeal, this appeal required us to construe the asserted claims based upon the final and complete record in the case.[80]

The fact that the earlier claim construction was performed by a different panel of judges (and in fact Judge Michel was on both panels) in no way justifies the court's lack of stare decisis. Subsequent panels of the appeals court are always bound to follow their own precedent.[81] Since *Markman* and *Cybor* made claim construction purely a question of law devoid of fact findings, stare decisis ought permanently to fix claim construction holdings in the same manner as resolved questions of statutory construction. Moreover, as a policy matter, the Federal Circuit ought not overturn its own claim constructions because competitors need to have a stable understanding of a patent's scope. In fact, the Supreme Court's decision in *Markman* was premised on the need for this exact stability.[82]

Similarly, the fact that the first decision was non-precedential does not explain the second panel's decision not to follow the earlier claim

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80. *Id.* at 1160 n.7.

81. *See, e.g.*, Texas Instruments Inc. v. Cypress Semiconductor Corp., 90 F.3d 1558, 1569 (Fed. Cir. 1996).

82. *See* Markman v. Westview Instruments, Inc., 517 U.S. 370, 390–91 ("Finally, we see the importance of uniformity in the treatment of a given patent as an independent reason to allocate all issues of construction to the court.").

construction. In a subsequent case, *Burke, Inc. v. Bruno Independent Living Aids, Inc*., the Federal Circuit held that, in the interest of consistency, the parties ought to be able to rely on Federal Circuit claim constructions despite the fact that they may issue in nonprecedential opinions.[83] In *Burke*, the Federal Circuit distinguished its actions in the *CVI/Beta* cases on the grounds that in "the first [CVI/Beta] case the claims were considered in the context of preliminary injunction proceedings, whereas in the second case the claim construction was based upon the final and complete record."[84] This distinction is not compelling where claim construction is a question of law, and, in both cases, the Federal Circuit based its construction on the exact same patent claims, specification, drawings, and prosecution history. There was no fuller, more complete record or additional evidence on claim construction present in *CVI II* that did not exist in *CVI I.* Despite the different procedural status of the case, the contradictory claim constructions of the exact same patent term based on the exact same supporting evidence are difficult (if not impossible) to reconcile.

The *CVI/Beta* cases create doubt about whether the Federal Circuit serves as a test of "accuracy" of district court claim construction. In light of these concerns, the remainder of this Part describes the claim construction decisions of the Federal Circuit judges in an attempt to ascertain, among other things, the frequency with which these judges disagree amongst themselves regarding the meaning of claim terms. Studying the outcome of claim construction appeals by individual Federal Circuit judges also allows us to examine whether popular perceptions about Federal Circuit decision-making being "panel dependent" can be substantiated empirically.[85] I study the voting patterns of the individual judges as well as the voting patterns of groups of judges. For example, I consider whether judges with technical backgrounds or prior patent experience are more likely to substitute their own meaning for technical patent claim language and,

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83. 183 F.3d 1334, 1337 (Fed. Cir. 1999).

84. *Id.* at 1337–38*; see also* Sofamor Danek Group, Inc. v. DePuy-Motech, Inc., 74 F.3d 1216 (Fed. Cir. 1996) (holding that district court judges are not obligated to conclusively construe claim terms at the preliminary injunction stage).

85. *See* John R. Allison & Mark A. Lemley, *How Federal Circuit Judges Vote in Patent Validity Cases*, 27 FLA. ST. U. L. REV. 745 (2000) (discussing belief among patent attorneys who practice before the Federal Circuit that "the outcome of their case depends on the panel they draw"); *see also* Mary L. Jennings, *Should Advocates Be Informed of the Identities of Members of Judicial Panels Prior to Hearings*, 6 FED. CIR. B.J. 41 (1996) (noting the refusal of the Federal Circuit to divulge which judges will hear any given case until the morning of oral argument to avoid possible judge-shopping).

correspondingly, whether the non-technical judges are more likely to adopt the district court construction.

There were nineteen Federal Circuit judges in the population who participated in one or more claim construction appeals.[86] Table 3 contains a list of the judges and details their participation in the cases in this database. As of this writing (April 2001), of the nineteen Federal Circuit judges listed in Table 3, eleven are active judges,[87] four are senior judges,[88] and four have died or retired.[89] Twelve of the judges have participated in more than forty such cases. Nine of the judges have construed more than 100 patent claim terms each.

86. Most cases are decided by a panel of three Federal Circuit judges. One case in the database was decided by more than three judges (*en banc*), and a few cases were decided by only two judges when one of the panel members died prior to issuance of the opinion and the other two judges were in agreement on the outcome.

87. They are Judges Bryson, Clevenger, Dyk, Gajarsa, Linn, Lourie, Mayer, Michel, Newman, Rader, and Schall.

88. They are Judges Archer, Friedman, Plager, and Skelton.

89. Judge Cowen is retired. Judges Nies, Rich, and Smith are deceased.

Table 3 – Participation by Federal Circuit Judges in Claim Construction Appeals

Judge	# of Cases	Opinions Authored	Majority	# of Claim Terms Construed	Dissents[90]
Archer	43	11	43	59	0
Bryson	74	19	73	120	1
Clevenger	87	25	87	122	0
Cowen	7	0	7	10	0
Dyk	1	0	1	2	0
Friedman	19	0	18	28	2
Gajarsa	64	17	64	91	0
Lourie	83	35	82	129	1
Linn	6	1	6	10	0
Mayer	80	2	79	131	1
Michel	82	21	81	125	1
Newman	79	19	76	129	3
Nies	1	1	1	2	0
Plager	60	13	60	100	0
Rader	106	34	101	169	6
Rich	59	22	59	97	0
Schall	82	18	82	136	0
Skelton	15	0	15	23	0
Smith	15	0	15	21	0

As Table 3 shows, in the 496 claim terms appealed to the Federal Circuit, there were only fifteen total dissents (most belonging to Judge Rader who alone dissented in six claim construction appeals). Hence only 3% of the time did Federal Circuit judges disagree amongst themselves on the proper claim construction. Although the *CVI/Beta*

90. These are dissents regarding the majority's claim construction only. If a judge dissented on an unrelated issue, it is not included in this dataset.

cases were both unanimous decisions, such decisions generally create a sense of security that the claim construction is not a coin flip. Moreover, the frequency with which the Federal Circuit judges are construing claims suggests that these judges are developing expertise at the task that will increase their ability to perform it accurately. While individual district court judges construe only a handful of patent claim terms, the Federal Circuit judges perform this task with great frequency.[91]

Table 4 below details the different substantive outcomes of the claim construction appeals by individual judges to ascertain whether there are any voting patterns or potential biases by individual Federal Circuit judges that appear in their past decisions.[92]

91. *See infra* notes 106–10 and accompanying text (explaining that because most patent cases settle at the outset of litigation district court judges are not actually exposed to many patent claim terms).

92. This data is not presented in an attempt to predict how individual Federal Circuit judges will vote in any future cases. Those who use it for those purposes do so at their peril.

Table 4 - Substantive Outcomes Among Federal Circuit Judges of Claim Construction Appeals

Judge	# of Claim Terms Construed	% of Terms District Court Construed Correctly	% of Cases District Court Construed All Terms Correctly
Archer	59	81%	73%
Bryson	120	72%	64%
Clevenger	122	75%	68%
Cowen	10	90%	86%
Dyk	2	0%	0%
Friedman	28	61%	41%
Gajarsa	91	74%	71%
Lourie	129	71%	64%
Linn	10	80%	83%
Mayer	131	71%	66%
Michel	125	79%	73%
Newman	129	70%	64%
Nies	2	50%	50%
Plager	100	73%	72%
Rader	169	72%	67%
Rich	97	60%	58%
Schall	136	68%	60%
Skelton	23	83%	80%
Smith	21	86%	87%

The third column of Table 4 reports the percentage of claim terms where each Federal Circuit judge held that the term should be construed in the same way that the district court judge construed it — an identity of construction. The last column of Table 4 gives the percentage of cases in which the district court got all appealed claim construction issues correct according to the Federal Circuit judges.

There is some variation among individual judges in the frequency with which they uphold the district court judge's claim construction. For example, Senior Judge Friedman participated in panels that held that

the district court judge properly construed patent claim terms 41% of the time and Senior Judge Smith 87% of the time. However, most Federal Circuit judges upheld district court claim constructions with similar frequency — near the mean of 67%. Among those judges who considered the appeal of more than 100 claim construction issues, the agreement with district court construction ranged from 60–73%. While the high number of reversals of district court claim constructions is not likely to surprise many, the high degree of conformance among voting patterns of the Federal Circuit judges in these claim construction appeals may.

It might also be informative to highlight the Federal Circuit judges who have a technical background to ascertain whether judges with more technical knowledge are more likely to substitute their own claim construction for that of the district court judge.[93] A simple linear regression model[94] allows a test of the hypothesis that there is no difference in the likelihood that Federal Circuit judges with a technical background and Federal Circuit judges without a technical background will construe claims differently from the district court judge. The regression result ($p=0.642$) does not permit rejection of the hypothesis.[95] This means that there is no statistically significant difference in how judges with a technical background and judges without a technical background reviewed district court claim constructions.[96] The result is the same even if we redefine the group as judges with prior patent-related experience. There are seven judges in the study with prior "patent" experience.[97] There is no significant

93. Judges Lourie, Newman, Gajarsa, and Linn have technical backgrounds.

94. A regression model permits examination of the relation between two variables: an independent variable (whether the Federal Circuit judge has a technical background or not) and a dependent variable (the outcome of the claim construction appeal).

95. The p value (also called significance level) is the probability of rejecting the null hypothesis when it is actually true. A rejection of the null hypothesis with p#0.05 is 95% confidence. Throughout this article, I use the term "significant" in the formal statistical sense indicating that the null hypothesis can be rejected with at least 95% confidence ($p \leq 0.05$). If $p>0.05$, I conclude that observed differences or relationships are not statistically significant, and the null hypothesis cannot be rejected in these cases.

96. ß=-0.015; t=-0.573; p=0.567

97. Only patent experience prior to appointment to the Federal Circuit is considered. Judges Lourie, Newman, Gajarsa, and Linn have technical backgrounds and practiced patent law. Judge Rich, often thought of as the father of modern American patent law, helped draft the 1952 Patent Act, taught patent law at various institutions, and wrote many articles on the subject. Judge Rader, prior to his appointment to the Court, was Senate counsel to the Subcommittee on Patents, Copyrights, and Trademarks. Judge Dyk represented Lubrizol in a number of patent litigations and argued five patent appeals to the Federal Circuit prior to joining the Court.

difference in how judges with patent experience and judges without patent experience review district court claim constructions.[98] Similarly, there is no significant difference in how judges appointed by Republicans and judges appointed by Democrats construe claims.[99] This fact indicates that neither Republican nor Democrat appointees exhibit any discernable tendencies to affirm or reverse district court claim constructions. No correlation among these variables seems like a good thing. We would rather have judges act independently, basing their decisions on the facts of each individual case before them, rather than according to some predisposition.

IV. CHOOSING BETWEEN CERTAINTY AND ACCURACY: WHICH IS TO BE MASTER — THAT'S ALL.

> I have had nine of my cases appealed to the Federal Circuit. I have been affirmed in one. I have been affirmed in part in one. And I have been reversed in seven. That does not relieve me — and I am not proud of that. I don't throw that out as a challenge to anyone — far from it. My duty is to predict what they are going to say and follow the law. But I haven't had noticeable success in dealing with these matters.
>
> Chief Judge William G. Young[100]

The high reversal rate on claim construction is problematic. It creates uncertainty in patent cases and in patent claim scope analysis until the Federal Circuit review is complete. This hinders ex ante attempts to ascertain permissible behavior and ex post attempts to litigate infringement. Claim construction is critical to both infringement and validity determinations. Greater unpredictability exists for litigants and competitors if claim construction is not certain or definite until it is appealed to the Federal Circuit. In addition to the obvious effects on the cases that are reversed, which could include lengthy and expensive

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98. ß=-0.001; t=-0.054; p=0.957

99. ß=0.009; t=0.325; p=0.746. Judges Archer, Clevenger, Lourie, Mayer, Michel, Newman, Plager, Rader, Rich, and Schall were appointed by Republican presidents. Judges Bryson, Cowen, Dyk, Friedman, Gajarsa, Linn, Nies, Skelton, and Smith were appointed by Democratic presidents. This is the party of the President who appointed the judge and not necessarily the party of the judge himself.

100. Honorable William G. Young, *High Technology Law in the Twenty-First Century*, 21 SUFFOLK TRANSNAT'L L. REV. 13, 19 (1997).

retrials, the high percentage of reversals increases litigation overall. Because of the increased uncertainty attending *de novo* review of claim construction, parties are less capable of predicting their chances of winning and therefore less likely to settle.[101] The unintended consequence of having district court judges construe patent claim terms as a question of law is that, rather than promoting settlement, it increases uncertainty and prolongs litigation because parties hold out for Federal Circuit review.[102] Treating claim construction as a question of law, however, permits *de novo* review by the Federal Circuit, which increases the accuracy of the claim scope analysis. This is important because the meaning of the claim terms determines the scope of the patent holder's exclusive rights.[103] The remainder of this Part examines possible solutions to this problem in an attempt to restore balance between the competing needs for certainty and accuracy in patent case adjudication.

A. More Deference to the District Courts: Should We Sacrifice Accuracy for Certainty?

Although more certainty in patent claim scope could be achieved by eliminating *de novo* review by the Federal Circuit, this is unlikely and unwise. There would be some benefit to greater deference to the district courts. Greater deference to the meaning assigned to claim terms by the district court would increase the affirmance rate at the Federal Circuit. Although this does not mean that the district court judges would be getting the meaning of the claims correct, the increased affirmance rate would nonetheless raise confidence in the judicial system. Greater deference would also discourage appeals and increase settlements earlier in the litigation process.[104] In addition, it may result in more thoughtful claim construction by district court

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101. *Cf.* RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW § 20.2 (5th ed. 1998) (arguing that litigation results from an uncertainty that causes a divergence of estimates).

102. With district court judges construing claim terms, there is likely to be an increased number of summary judgment grants, which may speed up case resolution.

103. If claims are construed too broadly, the patent holder's monopoly right is unnecessarily expanded, eliminating potential competition. If the claims are construed too narrowly, the patent holder is denied the exclusivity to which it is entitled. Both inaccurate claim constructions undermine the incentives behind the patent system, which attempts to strike a balance between the need to encourage innovative efforts and the need for competition.

104. Litigants would not hold out for a second chance to litigate claim construction on appeal if reversal rates were lower.

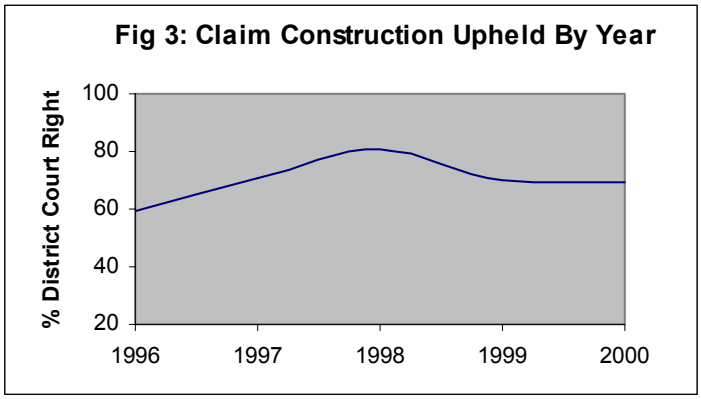
judges. Undoubtedly, with reversal rates so high, district court judges are frustrated with the claim construction process. If more deference were given to claim interpretations — making them more meaningful — it might encourage district court judges to invest more time in the process, resulting in better decisions.

The problem with giving claim construction greater deference on appeal is that if you believe that the Federal Circuit reversal rate is high because district court judges are erring in their interpretations of the technical patent terms, giving more deference would trade accuracy for certainty. Is it more important to have a quick result or to get the right result? Can the patent system flourish if the scope of the patentee's property right is wrongly assessed one-third of the time? The effects on innovation would be difficult to quantify.

B. Status Quo: Should We Sacrifice Certainty for Accuracy?

One argument could be that no changes should be made to the patent litigation process because over time district court judges will improve at construing claims with experience. Despite their lack of technical background, district court judges could become more adept at interpreting claim terms because they are repeat players in patent litigation. Unlike juries where each juror likely serves on only one patent case in their lifetime, district court judges are repeatedly exposed to patent cases on their docket. Moreover, since *Markman* was decided, the Federal Circuit has created many "canons of claim construction," which should serve as tools to aid the district court judge in interpreting patent claims.[105] The data, however, does not substantiate such improvement. Figure 3 shows that affirmance rates have not improved substantially over the five years since *Markman*. Note the decline in district court affirmances after *Cybor* was decided in 1998 resolving the standard of review controversy in favor of *de novo* review.

105. *See* KIMBERLY PACE MOORE ET AL., PATENT LITIGATION & STRATEGY 206–13 (West Group, American Casebook Series 1999) [hereinafter PATENT LITIGATION AND STRATEGY] (identifying and discussing nine canons of claim construction).



While it may be true that district court judges see more patent cases than the average juror, generally they do not adjudicate enough patent cases to develop expertise with the law and certainly not with the technology which changes from case to case. There are 646 active district court judges and more than 200 senior district court judges. Approximately 2200 patent cases are filed each year.[106] These figures indicate that district court judges are not seeing very many patent cases each year.[107] In fact, substantive involvement by district court judges in patent cases is far less than these numbers suggest because the majority of patent cases are resolved via settlement[108] or prior to any significant court involvement.[109] Only 5% of the patent cases filed each year go to trial (about 100 of the 2200 patent cases).[110] While district court judges may have more exposure to patent cases than jurors, their exposure to the technology and legal doctrines that arise in patent cases is very limited. In light of these numbers, it seems unlikely that district court judges will have sufficient exposure to patent cases or sufficient

106. From 1996–2000, the number of patent case filings were as follows: 1840, 2112, 2218, 2318, and 2484 in each respective year. *See* Annual Report of the Director of the Administrative Office of the United States Courts, Table C-2A (2000).

107. *See Forum Shopping*, *supra* note 3, at 932. The patent case filings are not evenly dispersed among the 94 district courts or the 646 plus judges, but rather consolidated in a few select districts. *See id.* at 903.

108. During the last five years, 63% of all the patent cases in the United States were resolved via settlement, 8% by motion, 6% by transfer, 1% by default judgment, and 17% by other means. *See id.* at 913 (Figure 3).

109. During the last five years, 49% of all the patent cases were resolved early in the litigation without any significant court action or before the defendant even filed an answer in the case, 46% were resolved mid-litigation, and only 5% went to trial. *See id.* at 910 (Figure 1).

110. *See id.*

incentive in light of the *de novo* review to improve at construing patent claim terms. The status quo of high reversal rates on claim construction will continue, depriving litigants of certainty until resolution of an appeal.

C. Expedited Appeals: Can We Balance Accuracy and Certainty?

There is simply no reason to have district court judges conduct trials and decide complex issues of patent infringement and validity based on their claim constructions when these constructions prove incorrect in 33% of the cases. The most efficient way to balance the need for certainty and accuracy in patent claim scope determinations would be to have the more accurate (final) adjudicator involved in the claim construction process earlier. This objective could be accomplished with an expedited appeal of the claim construction issues. In cases arising under the patent statute, the Federal Circuit generally only has jurisdiction "of an appeal from a final decision of a district court of the United States."[111] There are four potential ways to obtain early Federal Circuit review of a district court's claim construction.[112] First, an appeal can be taken if a summary judgment motion is granted and it disposes of all claims raised.[113] A grant of summary judgment of infringement or non-infringement following the district court's claim construction provides a route for expedited appeal of claim construction under limited circumstances.[114] Summary judgment of infringement is almost never appealable because of unresolved defenses such as invalidity and unenforceability which require trial. This means that no expedited appeal of claim construction is available to the infringer unless the infringer agrees to waive its unresolved defenses (invalidity and unenforceability).

A patent holder is more likely to obtain an expedited appeal following a summary judgment of non-infringement. Such a ruling would be final and appealable because it would be dispositive of liability — the defendant is not liable. Once the district court decides that the defendant does not infringe the patent, it is not required to

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111. 28 U.S.C. § 1295(a) (1994).

112. *See* John B. Pegram, *Markman and Its Implications*, 78 J. PAT. & TRADEMARK OFF. SOC'Y 560 (1996) (discussing the four potential vehicles for expedited appeal to the Federal Circuit).

113. FED. R. CIV. P. 56.

114. If there is no dispute over how the device accused of infringement operates, there may be no infringement issue remaining after claim construction, and accordingly summary judgment should be granted.

address any other affirmative defenses such as invalidity or unenforceability.[115] If, however, there is a lingering declaratory judgment counterclaim asking the court to declare that patent invalid or unenforceable[116] and these issues are unresolved, then the summary judgment of noninfringement is not appealable unless the district court certifies the appeal under Rule 54(b).[117] Rule 54(b) permits district court judges to enter final judgment with respect to one or more claims, even though there are outstanding counterclaims "upon an express determination that there is no just reason for delay and upon an express direction for the entry of judgment."[118] Greater use of Rule 54(b) in these limited circumstances ought to be encouraged to achieve some finality and certainty on the claim construction prior to conducting an expensive and lengthy trial on validity and enforceability.[119] Rule 54(b),

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115. *See* W.L. Gore & Assocs., Inc. v. Int'l Med. Prosthetics Research Assocs., Inc., 975 F.2d 858, 863 (Fed. Cir. 1992).

116. It is standard course in a patent infringement suit for the accused infringer to raise affirmative defenses of invalidity and unenforceability and to file a declaratory judgment counterclaim asking the court to declare the patent invalid or unenforceable. *See* PATENT LITIGATION AND STRATEGY, *supra* note 105, at 28.

117. *See, e.g.*, Trilogy Communications, Inc. v. Times Fiber Communications, Inc., 109 F.3d 739, 745 (Fed. Cir. 1997). It could be argued that permitting an appeal of claim construction issues (and corresponding infringement issues) while validity issues are still outstanding undermines the Supreme Court decision in *Cardinal Chemical Co. v. Morton International, Inc.*, 508 U.S. 83, 100–02 (1993), which emphasized the importance to the public at large of final resolution of validity issues. *See id.* (holding that the Federal Circuit may not vacate validity judgments after finding non-infringement). In *Cardinal Chemical*, the Supreme Court was concerned about the Federal Circuit forcing relitigation of resolved validity issues when it vacated validity judgments as moot after a finding of non-infringement was affirmed. *See id.* Permitting appeals from final judgments of noninfringement under Rule 54(b) or Rule 56 may force future litigation over validity and enforceability but does force relitigation as was the concern in *Cardinal Chemical.* Moreover, claim construction impacts claim scope, which in turn, affects validity determinations. It seems, therefore, that *Cardinal Chemical* ought not pose an obstacle to an expedited appeal of claim construction issues.

118. FED. R. CIV. P. 54(b).

119. Although not in the claim construction context, the Federal Circuit has recently encouraged use of Rule 54(b) by district court judges: "Although it is recognized that piecemeal appeals are inappropriate in cases that should be given unitary review, the entry of judgment under Rule 54(b) was clearly reasonable in this case, for it would avoid an unnecessary and lengthy trial of complex issues if the Rule 54(b) judgment were sustained." Intergraph Corp. v. Intel Corp., 253 F.3d 695, 699 (Fed. Cir. 2001) (granting Rule 54(b) judgment refusing to allow Intergraph to relitigate antitrust issues). The same logic applies to claim construction decisions that result in summary judgment of noninfringement. It would avoid unnecessary and lengthy trials of validity, enforceability, and other issues if these claim construction decisions were routinely

however, is useful for securing expedited review of claim construction only when the district court grants summary judgment of noninfringement. It does not apply if: (1) the district court cannot grant summary judgment because of a disputed issue of fact; or (2) the district court grants summary judgment of infringement, and there are outstanding defenses such as invalidity or unenforceability.

Summary judgment on the issue of infringement will likely increase after *Markman* because the meaning of the claim term is often dispositive of the claim scope. Unless there is some dispute over doctrine of equivalents issues or how the accused device operates, construction of the claim terms will often resolve the infringement issue. District court judges should certify these summary judgments when possible in order to secure expedited appeal of their claim construction decisions and avoid conducting trials with improper claim constructions.

There is also a right to immediate appeal from an order granting or denying a preliminary injunction.[120] However, the Federal Circuit has held that claim construction that occurs during the preliminary injunction stage, and its review of that claim construction, is not final.[121] The *CVI/Beta* cases demonstrate how unsatisfying this rule can be.[122] A balance needs to be struck between certainty and accuracy. Because claim construction should be based on the intrinsic evidence (the patent claims, specification, and prosecution history), claim construction that occurs at the preliminary injunction stage ought to be binding. If a *Markman* hearing is necessary, it could be held prior to the preliminary injunction ruling.

Finally, claim construction rulings could be appealed on an interlocutory basis pursuant to 28 U.S.C. § 1292(b) if the district court judge issued an order stating that the claim construction "involves a controlling question of law as to which there is substantial ground for difference of opinion and that an immediate appeal from the order may materially advance the ultimate termination of the litigation."[123] The

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certified under Rule 54(b).

120. 28 U.S.C. § 1292(c)(1) (1994).

121. *See* Sofamor Danek Group, Inc. v. DePuy-Motech, Inc., 74 F.3d 1216 (Fed. Cir. 1996) (holding that district court judges are not obligated conclusively to construe claim terms at the preliminary injunction stage).

122. *See supra* notes 73–80 and accompanying text.

123. 28 U.S.C. § 1292(b) (1994); *see also* Craig Allen Nard, *Process Considerations in the Age of Markman and Mantras*,2001 U. ILL. L. REV. 355, 378 (2001) (arguing in favor of interlocutory appeals of claim construction as a matter of right or as a matter of discretion); George Summerfield & Todd Parkhurst, *Procedures For Claim Construction After Markman*, 20 MISS. C. L. REV. 107, 115–16 (1999) (arguing in favor

Federal Circuit, however, has the discretion to accept or reject all interlocutory appeals, and thus far, it has refused all such claim construction appeals.[124]

Although no opinion has articulated the basis for the Federal Circuit's refusal, it is likely due, at least in part, to a belief that such appeals would dramatically increase the Court's workload. The Federal Circuit typically hears 450 appeals each year in patent cases from the district courts.[125] Although patent appeals only represent about 20% of the Federal Circuit's docket in terms of the number of cases, they are the most complex and time consuming of the cases the court hears.[126] There are approximately 2200 patent cases resolved each year in the district courts.[127] The Federal Circuit judges may fear that if claim construction were appealable on an interlocutory basis, many parties who settle rather than endure expensive and time-consuming litigation

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of interlocutory appeals of claim construction); Frank M. Gasparo, Note, *Markman v. Westview Instruments, Inc. and its Procedural Shock Wave: The Markman Hearing*, 5 J.L. & POL'Y 723, 762–63 (1997) (arguing in favor of interlocutory appeals of claim construction). In light of the 33% reversal rate of district court claim constructions, district court judges should not be reticent about certifying claim construction questions as there is clearly "substantial ground for difference of opinion" regarding these questions of law.

124. *See* Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1479 (Fed. Cir. 1998) (en banc) (noting that the Federal Circuit has refused to accept interlocutory appeals of claim construction).

125. *See* Annual Report of the Director of the Administrative Office of the United States Courts, Table B-8 (2000) (reporting 455 appeals filed from the district courts); Annual Report of the Director of the Administrative Office of the United States Courts, Table B-8 (1999) (reporting 466 appeals filed from the district courts); Annual Report of the Director of the Administrative Office of the United States Courts, Table B-8 (1998) (reporting 419 appeals filed from the district courts); Annual Report of the Director of the Administrative Office of the United States Courts, Table B-8 (1997) (reporting 395 appeals filed from the district courts).

126. *See* John B. Pegram, *Should There Be a U.S. Trial Court with a Specialization in Patent Litigation?*, 82 J. PAT. & TRADEMARK OFF. SOC'Y 766, 771 (2000) ("Patent litigation is only a small part of the Federal Circuit's jurisdiction, accounting for less than 20% of the caseload, but requiring a somewhat larger percentage of the judges' time due to the relatively high level of complexity of patent cases."). Moreover, the underlying patented technology is becoming more complex, making the cases themselves more difficult to adjudicate. *Cf.* John R. Allison & Mark A. Lemley, The Growing Complexity of the United States Patent System, 1976–1998, (unpublished manuscript, on file with author) (presenting the results of an empirical study of patents and concluding that patents are becoming increasingly complex). This likely impacts the time it takes to understand and resolve each individual patent case, and claim construction appeals would require comprehension of the patent, prosecution history, and underlying technology.

127. *Forum Shopping, supra* note 3, at 932.

would appeal claim construction prior to settlement because a Federal Circuit appeal is relatively inexpensive compared to a district court trial.[128] Moreover, district court judges would likely be eager to certify claim construction questions for interlocutory appeal before proceeding with a full blown trial (especially if the 33% reversal rate continues). These arguments have merit, and undoubtedly the court's workload would increase if interlocutory appeals of claim construction were permitted. The question is how much would it increase and is such an increase is manageable.

Utilizing a database of all patent cases terminated in the ninety-four district courts during the period 1995–1999, I attempt to quantify the impact on the Federal Circuit if interlocutory appeal of claim construction were permitted. A detailed description of the origin and compilation of the dataset appears in my prior work.[129] To summarize, the database contains all of the 9615 patent cases resolved by the ninety-four district courts during the five-year period 1995–1999.[130] It includes data on how the cases were resolved[131] and at what stage in the litigation that resolution occurs.[132] Sixty-three percent of all patent cases in the database settled during the district court proceedings (6007 of the 9615 cases).[133] The question is how many of these cases would have been appealed to the Federal Circuit rather than, or prior to, settlement. If all cases were appealed, it would triple the court's current docket of patent cases.[134] The court could not sustain such an increase.

Although 6007 patent cases did settle in the last five years, 34% of these settlements occurred prior to any court action.[135] These cases, which settled in many instances before the defendant even filed an answer or immediately following the pleadings but before any

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128. Patent trials routinely cost in excess of a million dollars per party. *See supra* note 4.

129. *Forum Shopping*, *supra* note 3, at 901–03.

130. These are the cases that were reported to the Administrative Office of the Courts as terminated during this period. The Administrative Office maintains statistics on the ninety-four district courts and their dockets.

131. Procedural mechanisms for resolution include transferral, settlement, consent judgment, jury verdict, and verdict on motions before trial.

132. Resolution can occur before defendants are joined, without court action, by way of a judgment on a motion, after pre-trial conference, or during or after a trial.

133. *Forum Shopping, supra* note 3, at 913.

134. Approximately 1200 cases each year settle, and the Federal Circuit currently hears approximately 400 patent appeals from the district courts. If all of the settled cases were also appealed, the court's workload would triple.

135. *Forum Shopping, supra* note 3, at 913.

significant discovery or motions, are unlikely to be affected by the promise of early appeal of claim construction. These parties did not even wait for a district court claim construction prior to settlement. Of the 6007 settled cases, 25% settled after a judgment on a motion or after the pre-trial conference was held. These are the mid-litigation cases in which it is most likely claim construction could have impacted the settlement.[136] Of course, claim construction did not occur in all of these cases, and claim construction did not necessarily precipitate settlement. In short, not all of these cases would be appealed even if interlocutory appeal of claim construction was a matter of right. However, even if half of the cases (150 cases per year) were appealed, it would drastically increase the Federal Circuit's workload. This would amount to a 38% increase in the court's patent case docket. Moreover, 1.4% of the settlements (ninety cases) occurred during or after trial. These cases would almost certainly have been appealed on an interlocutory basis to the Federal Circuit because the parties were so invested that they proceeded all the way to trial. This would result in an additional eighteen interlocutory appeals each year, a 4.5% increase in the Federal Circuit's patent case docket. This data suggests that concern regarding the impact interlocutory appeal would have on the workload of the Federal Circuit is justified.

Although I hypothesize a 42.5% increase in the number of patent cases appealed if interlocutory appeals are accepted, not all appeals are created equally. Interlocutory appeals limited to claim construction issues, based upon a limited record, are not likely to be as complex or time-consuming for the court as standard post-trial patent appeals in which the gamut of appealable issues are raised. If a claim construction appeal takes less time relative to the appeal of an entire case, then the increase in the court's docket, as measured by the number of case appeals, is not an accurate prediction of how much this will increase the workload of the court. While the docket may increase by 42.5% these cases may not result in a corresponding 42.5% workload increase. Even if claim construction appeals are less time-consuming, the magnitude of the workload increase is likely high enough that concern is justified. However, the impact on the litigants and the district courts of the high reversal rate of claim construction and the inability to obtain expedited appeal of this issue justifies similar concern. Many patent

136. Because *Markman* was not decided until 1996, I also looked at the data for 1997–1999, and it was proportional — 25% of all settlements during this three-year period occurred after a judgment on motion or after pre-trial conference.

trials utilize improper claim constructions, necessitating wasteful retrial.[137]

There is a compromise solution. Permitting interlocutory appeal of all claim construction issues would overburden the Federal Circuit. Refusing all interlocutory appeals leaves almost no ability to obtain expedited appeal on claim construction, which overburdens the district courts and deprives the litigants of speedy justice. The Federal Circuit need not, however, grant interlocutory appeal to every claim construction ruling. The Court could adopt a policy of granting interlocutory appeal of claim construction issues only after a grant of summary judgment of infringement or non-infringement or at some other defined stage of the litigation proceedings. Rather than grant or deny interlocutory appeal on a case-by-case basis, which would flood the Federal Circuit with such requests, a blackletter ruling in which the court articulated the limited circumstances where such appeals were justified would strike the appropriate balance.[138] In addition to the efficiency benefits, permitting interlocutory appeals after summary judgment rulings would be fairer to the parties because it would permit the parties then to present infringement evidence on the correct claim construction to the fact finder. This would avoid the *Exxon* effect having the Federal Circuit adopt a claim construction upon which no infringement evidence was admitted during trial and then decide infringement.[139]

If the Federal Circuit maintains its blanket refusal to entertain interlocutory appeals on claim construction, a statutory mandate from Congress may be the only means of achieving some degree of

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137. Moreover, since patent holders are often engaged in litigation against more than one competitor to enforce their patent rights, early finality regarding claim construction could also reduce litigation against multiple parties. For example, patent holder, P, sued infringer I_1. Then, the case settles or is otherwise resolved prior to Federal Circuit resolution of claim construction due in large part to the fact that appeal to the Federal Circuit is not permitted until too late in the game. This litigation against I_1 then does not provide other competitors notice of permissible behavior. Other suits may be filed by P against other infringers, I_2, I_3, I_4, etc. Until one of the suits is finally resolved by the district court in a manner appealed to the Federal Circuit, there will continue to be uncertainty regarding the claim scope. In this way, too, the current uncertainty increases litigation.

138. I am not suggesting that the Federal Circuit adopt a certiorari style of deciding whether particular cases are worthy of early appeal. The court would be better off deciding the claim construction appeals that the parties want decided rather than debating the petitions themselves. A blackletter rule limiting interlocutory appeal to decisions on summary judgment ought to be sufficiently definitive.

139. *See supra* notes 56–59 and accompanying text.

reasonableness in this process. Some congressmen believe that the Federal Circuit's workload is less than the workload of many regional circuits.[140] Hence, a statute to impose a right of appeal regarding claim construction could be well received in Congress.

V. CONCLUSION

Although there has been considerable speculation on the abilities of judges and juries to resolve patent cases, most criticism focuses on the inability of lay juries to comprehend technically complex patent cases. Little attention and no empirical study has dissected or analyzed whether district court judges are the appropriate alternative. This empirical study of the Federal Circuit's *de novo* review of district court claim constructions leaves little doubt that the present system of adjudication is flawed. The 33% reversal rate of district court claim constructions suggests that judges are not, at present, capable of resolving these issues with sufficient accuracy. This infuses the patent system with a high degree of uncertainty until the Federal Circuit rules on claim construction. Rather than choosing between accuracy and certainty, this Article suggests that the patent system would be best served by a

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140. During the consideration of appointments to the Federal Circuit, some Congressmen have suggested that the Federal Circuit workload is not high enough to warrant eleven judges. *See, e.g.*, 146 CONG. REC. S4261–02 (May 23, 2000) (citing Grassley report of March 30,1999) ("In fact, the current status of the circuit actually supports the argument that the court could do its job with a smaller complement of 11 judges.").

> The Federal Circuit [has] . . . the lowest caseload in America-has the lowest terminations per judge of any circuit court of appeals. It has a 16-percent decrease in overall caseload, with a clear recommendation from the Grassley subcommittee report that there is not a need to add another judge to this circuit. I suggest that we not approve this judge, not because he is not a good person but because we don't need to burden the taxpayers with $1 million a year for the rest of his life to serve on a court that doesn't need another judge. In fact, they could probably get by with two or three fewer judges than they have right now and still have the lowest caseload per judge in America.

Id. (Senator Sessions). My own experience with the Federal Circuit, having clerked for two years for the Honorable Glenn L. Archer, is that the judges of the Court are extremely hard-working and the complexity of the patent cases that are appealed makes quantifying the Court's workload based on number of cases an inappropriate measure of workload. My previous empirical research substantiated that patent cases are among the most complex of all civil cases. *See Forum Shopping*, *supra* note 3, at 933.

compromise between the two. Expedited appeals of a limited number of claim construction issues would strike the appropriate balance.

Ideally, the solution lies in increasing the accuracy at the trial level. More research needs to be done on alternative methods of trial level resolution whether by blue ribbon juries,[141] specialized trial courts,[142] specialized trial court judges,[143] or greater incorporation of special masters.[144] Until this can be achieved, the Federal Circuit should mitigate the damage to the patent system by allowing parties, under limited circumstances, access to an expedited appeal regarding claim construction issues.

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141. *See, e.g.*, Davin M. Stockwell, *A Jury of One's (Technically Competent) Peers?*, 21 WHITTIER L. REV. 645 (2000) (arguing in favor of technical qualifications for jurors in patent cases); Franklin Strier, *The Educated Jury: A Proposal for Complex Litigation*, 47 DEPAUL L. REV. 49 (1997) (proposing use of educated jurors in patent litigation because lay jurors are ill-equipped to deal with the complexity of the issues being tried).

142. *See Forum Shopping*, *supra* note 3, at 932–34 (discussing the benefits that could be achieved by a specialized trial court); Pegram, *supra* note 126, at 766 (2000) (arguing in favor of giving the Court of International Trade parallel patent case jurisdiction with the district courts).

143. *See* ADVISORY COMM'N ON PATENT LAW REFORM, REPORT TO THE SECRETARY OF COMMERCE (August 1992) (discussing designation of patent cases to patent "expert" judges or designating a single judge in each district to hear all patent cases). *Cf.* Edward V. Di Lello, Note, *Fighting Fire with Firefighters: A Proposal for Expert Judges at the Trial Level*, 93 COLUM. L. REV. 473, 490–91 (1993).

144. *See* Kenneth R. Adamo, *Get on Your Marks, Get Set, Go; Or And Just How Are We Going To Effect Markman Construction In This Matter, Counsel?*, *in* PATENT LITIGATION 2000, at 175, 205 (PLI Patents, Copyrights, Trademarks and Literary Property Practice Course, Handbook Series No. 619, 2000) (suggesting that the increased use of special masters to construe patent claims has gained favor with the district courts and has been used extensively).