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## Patent Claim Interpretation Review: Deference or Correction Driven?

*Christopher A. Cotropia* \*

*This Article examines the Federal Circuit's review of claim constructions by lower tribunals to determine whether the Federal Circuit defers to lower court constructions or is making its own, independent determination as to the "correct" construction and ultimate result in the case.*

*The data collected from 2010 to 2013 indicates that the Federal Circuit affirms about 75% of lower court claim interpretations. While this finding is itself surprising, even more surprising is that these reviews do not appear to be driven by deference. Instead, the Federal Circuit is less likely to correct constructions that resulted in a patentee loss below, and the court is more likely to reverse claim constructions that resulted in a patentee win below. And this difference is magnified in cases involving electronics, information technologies, and business methods, with such patentees faring even worse than others in claim construction appeals.*

*These findings suggest that the Federal Circuit's review of claim interpretations is still truly de novo and performed to correct lower court decisions (a) where patentees win and (b) especially where patents covering electronics, information technologies, and business methods succeed.*

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## INTRODUCTION

Claim interpretation is important in patent law.<sup>1</sup> It is a necessary first step to determine whether an accused device or method falls within the scope of a patent's claims and thus infringes.<sup>2</sup> Claim interpretation is also needed to resolve questions of patent validity and determine whether the claim simply recites what has already been done before or is obvious.<sup>3</sup> Claim meaning establishes the metes and bounds of the patent, defines the invention, and thus sits at the center of determining a patent's "power."<sup>4</sup>

The standard of review for this crucial determination in patent cases is currently being considered by the Supreme Court. The Federal Circuit, the appellate court with exclusive jurisdiction over patent cases, has reviewed claim interpretations by lower courts de novo for at least the last fifteen years.<sup>5</sup> Now, in *Teva Pharmaceuticals USA, Inc. v. Sandoz, Inc.*, the Supreme Court will consider whether de novo review is the proper appellate standard of review.<sup>6</sup>

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1. See R. Polk Wagner & Lee Petherbridge, *Is the Federal Circuit Succeeding? An Empirical Assessment of Judicial Performance*, 152 U. PA. L. REV. 1105, 1119 (2004) ("[I]t is clear that claim construction plays a major—and perhaps the major—role in patent infringement litigation."); Giles S. Rich, *Extent of Protection and Interpretation of Claims—American Perspectives*, 21 INT'L REV. INDUS. PROP. & COPYRIGHT L. 497, 499 (1990) ("[T]he name of the game is the claim.").

2. See *Absolute Software, Inc. v. Stealth Signal, Inc.*, 659 F.3d 1121, 1129 (Fed. Cir. 2011) (citation omitted) ("Determining infringement requires two steps. 'First, the claim must be properly construed to determine its scope and meaning. Second, the claim as properly construed must be compared to the accused device or process.'" (citation omitted)).

3. See *Dana Corp. v. Am. Axle & Mfg., Inc.*, 279 F.3d 1372, 1376 (Fed. Cir. 2002) (citations omitted) ("In any event, a court may not invalidate the claims of a patent without construing the disputed limitations of the claims and applying them to the allegedly invalidating acts."); *Key Pharms. v. Hercon Labs. Corp.*, 161 F.3d 709, 714 (Fed. Cir. 1998) ("We observe in passing that, not unlike a determination of infringement, a determination of anticipation, as well as obviousness, involves two steps. First is construing the claim, a question of law for the court, followed by, in the case of anticipation or obviousness, a comparison of the construed claim to the prior art.").

4. Christopher A. Cotropia, *Patent Claim Interpretation Methodologies and Their Claim Scope Paradigms*, 47 WM. & MARY L. REV. 49, 53–62 (2005).

5. See *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1454–56 (Fed. Cir. 1998) (en banc).

6. *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 134 S. Ct. 1761 (2014) (granting certiorari). The Federal Circuit recently considered, and affirmed, the de novo review standard en banc. See *Lighting Ballast Control LLC v. Philips Elecs. N. Am. Corp.*, 744 F.3d 1272, 1276–77 (Fed. Cir. 2014) (en banc) (affirming *Cybor Corp. v. FAS Technologies, Inc.*, 138 F.3d 1448 (Fed. Cir. 1998) (en banc)).

Considering how an appellate court should review claim interpretation decisions presents a myriad of issues. However, two considerations dominate the debate.

The first is certainty. De novo review, which allows the Federal Circuit to make claim interpretation determinations with no deference to the lower court's interpretation, results in great uncertainty in patent cases.<sup>7</sup> In fact, the certainty, or lack thereof, created by de novo review was a central question in the Federal Circuit's recent en banc decision considering the review standard.<sup>8</sup> Litigants cannot predict the controlling claim construction in a case until the Federal Circuit makes its independent determination on appeal.<sup>9</sup> And there is some data that backs this up. Early studies indicated that claim constructions were subject to reversal rates as high as 45%, fueling uncertainty in patent cases until the Federal Circuit's review was complete.<sup>10</sup> Accordingly, a shift to a more

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7. See J. Jonas Anderson & Peter S. Menell, *Informal Deference: A Historical, Empirical, and Normative Analysis of Patent Claim Construction*, 108 NW. U. L. REV. 1, 5–7 (2014) (noting the common belief of uncertainty as to claim interpretation on appeal); see R. Polk Wagner & Lee Petherbridge, *Did Phillips Change Anything? Empirical Analysis of the Federal Circuit's Claim Construction Jurisprudence*, in INTELLECTUAL PROPERTY AND THE COMMON LAW 123, 148 (Shyamkrishna Blaganesh ed., 2012) (concluding that the Federal Circuit's claim construction review has “undermined . . . efforts to develop a coherent and predictable jurisprudence.”).

8. See *Lighting Ballast*, 744 F.3d at 1290–91 (concluding that the current data evidences an acceptable reversal rate); but see *id.* at 1309–10 (O'Malley, J., dissenting) (“lamenting” the high reversal rate and the uncertainty it creates).

9. See *Merck & Co. v. Teva Pharm. USA, Inc.*, 395 F.3d 1364, 1381 (Fed. Cir. 2005) (Rader, J., dissenting) (stating that the Federal Circuit “often hears criticism from district court judges that its reversal rate on claim construction issues far exceeds that of other circuit courts”); Dan L. Burk & Mark A. Lemley, *Fence Posts or Sign Posts? Rethinking Patent Claim Construction*, 157 U. PA. L. REV. 1743, 1745 (2009) (“Claim construction is sufficiently uncertain that many parties don't settle a case until after the court has construed the claims, because there is no baseline for agreement on what the patent might possibly cover.”); Chester S. Chaung, *Offensive Venue: The Curious Use of Declaratory Judgment to Forum Shop in Patent Litigation*, 80 GEO. WASH. L. REV. 1065, 1071 (June 2012); Timothy R. Holbrook, *Equivalency and Patent Law's Possession Paradox*, 23 HARV. J.L. & TECH. 1, 14 (2009).

10. See Kimberly A. Moore, *Markman Eight Years Later: Is Claim Construction More Predictable?*, 9 LEWIS & CLARK L. REV. 231, 232–34 (2005) (reporting a 34.5% reversal rate); David L. Schwartz, *Practice Makes Perfect? An Empirical Study of Claim Construction Reversal Rates in Patent Cases*, 107 MICH. L. REV. 223, 248–49 (2008) (finding 38.2% of appeals from 1995 to 2005 reversed at least one claim term construction by the lower court); Andrew T. Zidel, *Patent Claim Construction in the Trial Courts: A Study Showing the Need for Clear Guidance from the Federal Circuit*, 33 SETON HALL L. REV. 711, 741–46 (2003) (reporting a 41.5% reversal rate); Christian A. Chu, Comment, *Empirical Analysis of the Federal Circuit's Claim Construction Trends*, 16 BERKELEY TECH. L.J. 1075, 1103 (2001) (reporting a 44% reversal rate); Michael Saunders, Note, *A Survey of Post-Phillips Claim Construction Cases*, 22

deferential standard of review would result in more certainty, thus enabling litigants to rely more on the stability of lower court interpretations.<sup>11</sup> With greater deference, certainty would come earlier in patent cases.

The second issue claim construction review presents is one of correction.<sup>12</sup> Appellate review is in place, at least in part, to correct mistakes made by lower courts and ensure the “correct” result is reached in a given case.<sup>13</sup> There can be much debate over what is a correct construction in a given patent case, whether it is the true meaning of the claim language in dispute or the final result and which party should ultimately win under a given set of facts.<sup>14</sup> The more deference provided to lower courts on this crucial patent issue, the more the Federal Circuit’s hands will be tied to ensure the correct result is reached, or at least the result they believe to be correct. The standard of review presents the question of who is more likely to reach the correct answer regarding claim interpretation, which, given its central nature to the patent dispute, is necessarily tied to the ultimate question of who should win a given patent case.

While these issues need to be explored to determine the optimum standard of review (How much is greater certainty worth? Who is more likely to reach the correct answer? What is the correct answer we want to achieve?), there is value in establishing a baseline as to the state of the standard currently. Assuming the Federal

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BERKELEY TECH. L.J. 215, 232–35 (2007).

11. See Daniel Gopenko, *Reconsidering the De Novo Standard of Review in Patent Claim Construction*, 40 AIPLA Q.J. 315, 334 (“Most notably, de novo review in claim construction has led to high reversal rates of claim construction on appeal.”).

12. The majority in *Lighting Ballast* recognized this aspect of claim construction review—the need to get claim meaning correct. *Lighting Ballast*, 744 F.3d at 1280–86 (explaining the need for consistency and correctness in claim interpretation).

13. See David Frisch, *Contractual Choice of Law and the Prudential Foundations of Appellate Review*, 56 VAND. L. REV. 57, 74 (2003) (“Discussions of the essential functions of appellate review have been dominated by the distinction between error correction and law development . . .”); Christopher M. Pietruszkiewicz, *Economic Substance and the Standard of Review*, 60 ALA. L. REV. 339, 360 (2009) (“Appellate courts should serve to develop the law in a particular area as guidance for future cases and to rectify egregious errors in particular cases.”); Michael E. Solimine, *Ideology and En Banc Review*, 67 N.C. L. REV. 29, 52 (1988) (citation omitted) (“One should begin by reviewing the purposes and functions of the federal courts of appeals. It is widely acknowledged that these courts serve both an ‘error correction’ and a ‘law development’ function.”).

14. See, e.g., Christopher A. Cotropia, *What Is the “Invention”?*, 53 WM. & MARY L. REV. 1855 (2012) (discussing the various theories as to proper patent scope); Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 VA. L. REV. 1575 (2003).

Circuit claim construction is correct, then it follows that de novo review results in greater correctness, albeit at the expense of increased uncertainty. But both of these assumptions rest on the belief that the Federal Circuit currently stays true to de novo review, providing no deference in practice, and that the Federal Circuit arrives at the “correct” result in appealed cases, at least more often than district courts do on the first pass.

This Article establishes an empirical baseline for these core questions regarding appellate review of claim interpretation. The Article does so by examining Federal Circuit determinations on claim construction over the last four years. Looking at these decisions where the appellate court reviewed a lower tribunal’s claim interpretation, the Article reports on the degree of uncertainty in these cases: how often the lower court’s interpretation was reversed; where the Federal Circuit believed there needed to be “correction”; whether the court reversed broad or narrow constructions; and whether these changes impacted patentee wins or losses below.

The observed data, at first blush, indicates that there is more certainty than many believe under de novo review.<sup>15</sup> The rate of affirmance of district claim interpretation has been increasing since 2010. And, in 2013, the affirmance rate reached over 75%.

However, more interestingly, a close look as to which claim interpretations are affirmed and which are reversed shows little certainty for particular types of cases. Lower court decisions where the patentee wins are more likely to be subject to a claim construction reversal that prompts a change in the case’s outcome. And this is even more likely with appeals in cases involving electronic, information technology, or business method patents. The only true certainty appears in claim constructions in electronic, information technology, or business method cases where the patentee loses below. In these cases, the claim construction affirmance rate is the highest.

Put simply, the Federal Circuit’s claim interpretation review is not driven solely, or at all, by deference. The court is engaged in correction of claim constructions in certain cases, and these corrections appear to be result-driven, favoring infringers over patentees and biological,

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15. An important notable exception is the recent study by Anderson & Menell, *supra* note 7. In looking at claim construction reversal by the Federal Circuit through 2011, the authors find a significant reduction in reversals after *Phillips*.

chemical, and mechanical technologies over electronics, information technologies, and business methods.

This Article proceeds in three parts. Part I describes the study's design. Part II reports the results from the study. And Part III analyzes these results.

### I. STUDY DESIGN

All Federal Circuit decisions involving utility patents from January 1, 2010, to December 31, 2013, were collected.<sup>16</sup> This included all reported decisions, both published and unpublished, and Rule 36 summarial affirmances.<sup>17</sup>

These decisions were searched for reviews of lower court claim interpretations. For written decisions, both published and unpublished, the decisions were examined to determine whether the Federal Circuit affirmed or reversed a claim interpretation determination by the lower court.<sup>18</sup> This included the interpretation of at least one claim term's meaning, and also included determinations of whether or not a claim term was indefinite or whether a claim was governed by § 112(f) and written in means-plus-function or step-plus-function language.<sup>19</sup> Claim interpretation appellate reviews impacting both infringement and validity were observed.

For Rule 36 cases, claim interpretation reviews were determined by looking at the briefs submitted by the parties.<sup>20</sup> If either party argued in their brief that the appeal's resolution required review of a

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16. Appellate decisions of design patent cases were not included in this study.

17. Federal Circuit Rule 36 allows judgment of affirmance without opinion when certain conditions exist and an opinion would have no precedential value. *See* FED. CIR. R. 36.

18. Appeals from the United States Patent and Trademark Office ("USPTO") were not used in this study, while appeals from the United States International Trade Commission ("ITC") were. Appeals from the USPTO involve a different standard for interpretation—broadest reasonable interpretation—for patent claims, which invokes more deference to the appealed decision as compared to that methodology used by district courts and the ITC. *See* Dawn-Marie Bey & Christopher A. Cotropia, *The Unreasonableness of the Patent Office's "Broadest Reasonable Interpretation" Standard*, 37 *AIPLA Q.J.* 285, 288–91 (2009) (explaining the difference).

19. *See* 35 U.S.C. § 112(b), (f) (2012).

20. This is a similar procedure used by others studying claim construction and the review of other patent doctrines. *See* Anderson & Menell, *supra* note 7, at 35–39; Schwartz, *supra* note 10, at 238.

claim interpretation by the lower court, the case was identified as involving a claim interpretation review.

As a result, the study included 314 cases involving claim interpretation reviews by the Federal Circuit. Of these cases, 118 were reviews done via Rule 36 determinations.

These Federal Circuit decisions were then coded as to whether the lower court's claim interpretation was affirmed or reversed. Some decisions involved the review of multiple claim term interpretations. If all of the claim term interpretations under review were affirmed, the claim interpretation decision was coded as affirmed. If all of the claim term interpretations under review were reversed (that is, changed by the Federal Circuit), the claim interpretation decision was coded as reversed. If the appellate review was mixed, with some claim term interpretations being affirmed and other being reversed, the appellate decision was coded as "mixed" for its claim interpretation determination.<sup>21</sup>

The scope of the claim construction adopted by the Federal Circuit was also coded. An attempt was made to code each Federal Circuit decision as construing the claims at issue as either broad or narrow in claim scope.<sup>22</sup> This coding is based on the traditional binary battle in patent cases with plaintiff and defendant presenting their respective claim constructions and the district court and Federal Circuit selecting one of the two.<sup>23</sup> When the case centers on infringement, typically the patentee presents a broader construction

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21. This approach, on a case basis, as opposed to a claim term basis, deviates from prior studies. *See, e.g.*, Anderson & Menell, *supra* note 7, at 6. However, the results of this study and Anderson and Menell's are close. And this study observed a common "stampeding effect" where most cases involved an affirmation of all claim term interpretations or reversal of all interpretation. Only 16 of 314 cases resulted in "mixed" claim interpretations where some term interpretations were affirmed while others were reversed. In addition, a case-unit approach prevents a single dispute with a large number of claim terms from skewing the study's results. Finally, considering that the other codings—particularly with regards to the ultimate case outcome—are not observable on a term-by-term basis, the claim construction reviews were coded so that they could be compared with the other data observed.

22. The broad or narrow claim construction coding is done in the context of the claim constructions proposed by the parties. These breadth codings are not absolute or measured against some non-case-driven baseline.

23. David C. Radulescu, *The Federal Circuit's Narrowing of the Literal Scope of Patent Claims by Focusing on Embodiments Disclosed in the Specification*, 82 J. PAT. & TRADEMARK OFF. SOC'Y 539, 542 (2000) ("Accordingly, in what follows, this article reviews the reasoning and implications underlying certain of the Federal Circuit's recent claim construction opinions where tension between the above two rules was inherent in the Court's consideration of whether to adopt 'broad' or 'narrow' claim constructions.").



compared to a narrower one offered by the alleged infringer.<sup>24</sup> If the dispute is mainly about invalidity, the positions are traditionally flipped.<sup>25</sup>

Cases where it was unclear whether a broad or narrow construction was selected were coded “unclear.” An unclear coding typically involved individual claim terms being construed by the Federal Circuit in different “directions”—some broad, some narrow—and then the resulting claim scope for the case was unclear.<sup>26</sup> Finally, if the dispute was over whether or not the claims were means-plus-function claims governed by §112(f), the resolution of this issue left the comparable claim scope unclear given the nuanced claim scope created by § 112(f).<sup>27</sup>

There was a final category of observed claim scope as a result of the Federal Circuit’s review: “neither.” Neither decisions were decisions reviewing and resolving a lower court’s determination of indefiniteness. The Federal Circuit, in reviewing these claim constructions, is asked to determine whether a claim can be given any meaning or is “insolubly ambiguous.”<sup>28</sup> These cases do not present a broad versus narrow question, but instead a meaning versus no meaning question. Accordingly, the resolution of these cases by the Federal Circuit select “neither” a broad nor a narrow construction and were coded as such.

The Federal Circuit decisions were also coded as to the ultimate outcome of the case both before the appeal—at the lower court

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24. Roger A. Ford, *Patent Invalidity Versus Noninfringement*, 99 CORNELL L. REV. 71, 95 (2013).

25. *Id.*

26. *See, e.g.*, *Silicon Graphics, Inc. v. ATI Techs., Inc.*, 607 F.3d 784, 790–92 (Fed. Cir. 2010) (construing three claims terms, two broadly and one narrowly).

27. *See, e.g.*, *Inventio AG v. Thyssenkrupp Elevator Ams. Corp.*, 649 F.3d 1350 (Fed. Cir. 2011). Section 112(f), which governs means-plus-function claims, defines the resulting claim scope as including the structure disclosed in the patent’s specification for performing the claim function and that structure’s equivalent. Comparing this scope to the scope of the claim terms given their ordinary meaning presented difficulties in determining which scope—section 112(f) compared to plain meaning—is broader.

28. *See, e.g.*, *Noah Sys. Inc. v. Intuit Inc.*, 675 F.3d 1302, 1311 (Fed. Cir. 2012) (“Whether a claim complies with the definiteness requirement of 35 U.S.C. § 112[(b)] is a matter of claim construction, which we review de novo.”); *see also* 35 U.S.C. § 112(b) (2012); *Haemonetics Corp. v. Baxter Healthcare Corp.*, 607 F.3d 776, 783 (Fed. Cir. 2010) (“An accused infringer must . . . demonstrate by clear and convincing evidence that one of ordinary skill in the relevant art could not discern the boundaries of the claim based on the claim language, the specification, the prosecution history, and the knowledge in the relevant art.”).

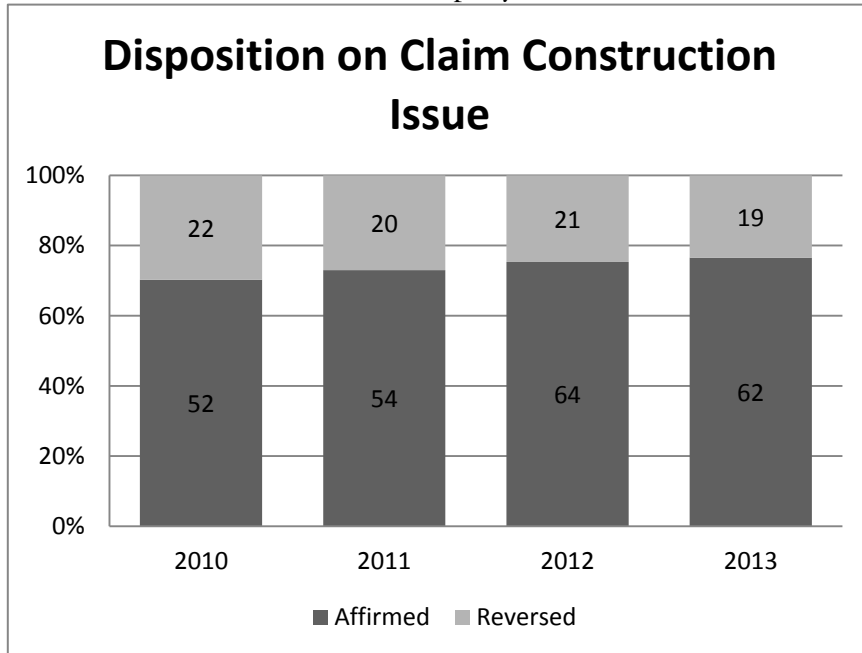
level—and as a result of the Federal Circuit’s appellate review. In each opinion involving a claim construction review, the appealed lower court case was coded as to whether the patentee or alleged infringer won below. As long as the patentee won a claim of infringement against at least one alleged infringer on at least one valid claim, the lower tribunal decision was coded as a patentee win. If the patentee lost all of its claims—either due to findings of non-infringement and/or invalidity—the case was coded as a patentee loss. Then, the result of the Federal Circuit decision was coded. Again, the case was coded as a patentee win if the Federal Circuit found at least one valid claim was infringed by at least one alleged infringer. Otherwise, the case was coded as a patentee loss. A third “result” category was added at the Federal Circuit level: “vacated and remanded.” The case was coded as such if the Federal Circuit ultimately vacated the lower court’s decision and remanded the case without any party succeeding on a claim as a result of the appeal.

Finally, the cases were coded as to the technology at issue in the case. While individually asserted patent information was collected for each case, the cases were ultimately grouped into three broad technology categories. Cases were coded as either involving (1) biological or chemical technologies; (2) electronics, information technologies, or business methods; or (3) mechanical technologies.

## II. RESULTS

Of the 314 claim construction decisions, 232 Federal Circuit decisions affirmed the lower court’s claim term construction(s), 66 decisions reversed the lower court’s claim term construction(s), and 16 decisions were mixed—affirming at least one claim term construction while also reversing at least one claim term construction. Counting the mixed decisions as reversals, the Federal Circuit reversed at least one claim term’s construction in 26.1% of the claim construction decisions from 2010 through 2013.

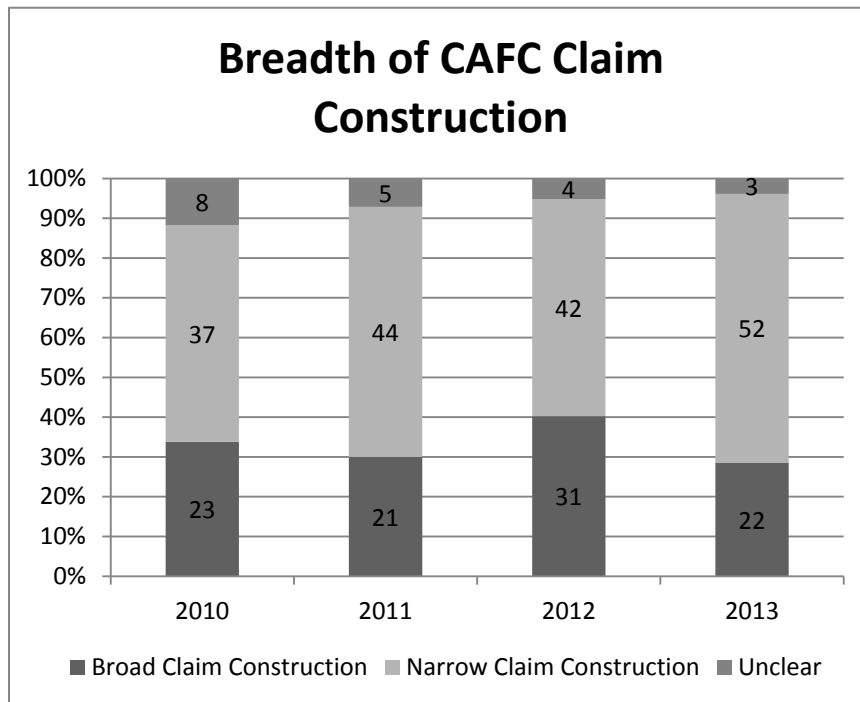
The affirmance rate is observed over time in Figure 1 below, looking at the number of affirmance decisions and the number of decisions with at least one reversal per year.



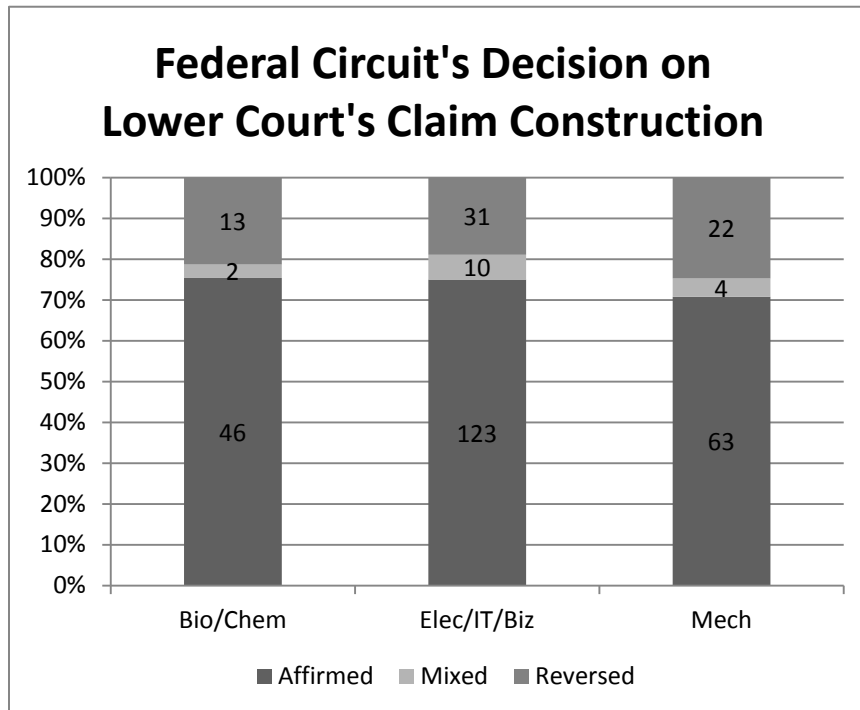
**FIGURE 1**

The data also indicates that in 314 decisions, the Federal Circuit chose a narrow construction in 175 cases, a broad construction in 97 cases, an unclear construction in 20 cases, and a “neither” construction in 22 cases. Accordingly, in a slight majority of cases—55.7%—the Federal Circuit construed the claims narrowly.

The scope of claim constructions adopted by the Federal Circuit, excluding those cases coded as neither because no breadth was selected by the court, is reported by year below in Figure 2.

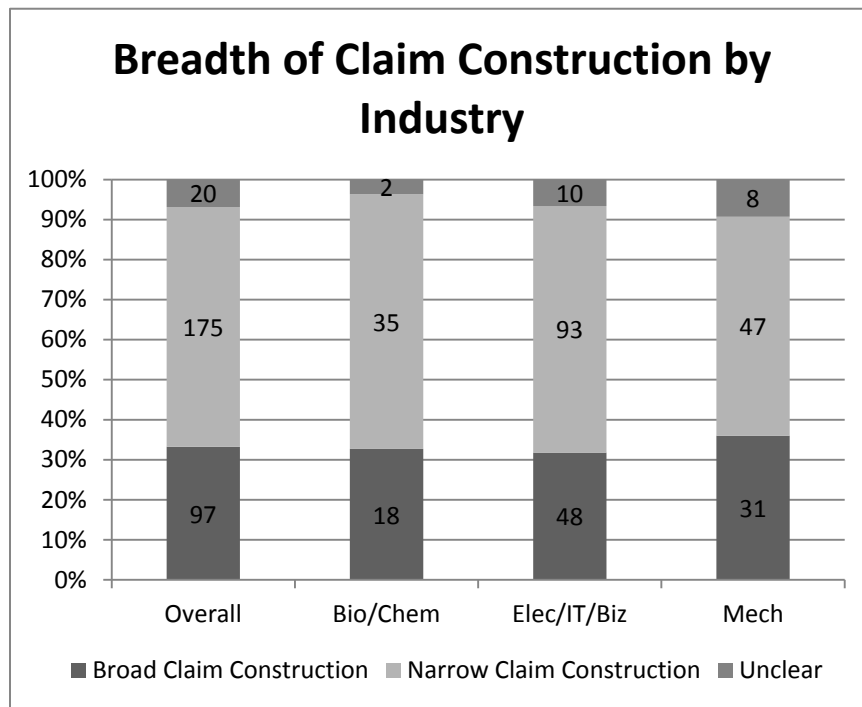
**FIGURE 2**

This data is also observable by industry. The observed decisions involved 61 appeals in biological or chemical technologies; 164 appeals in electronics, information technologies, or business methods; and 89 appeals in mechanical technologies. Figure 3, shown below, details how the lower tribunal's claim construction decisions were handled in each of these technological areas.

**FIGURE 3**

Counting mixed decisions by the Federal Circuit as reversals, 24.6% of the biological or chemical technology cases' claim constructions were reversed; 25.0% of the electronic, information technology, and business method cases' claim constructions were reversed; and 29.2% of the mechanical technology cases' claim constructions were reversed.

The claim construction decisions in various technologies can also be observed via the breadth of construction adopted by the Federal Circuit. Figure 4, below, reports these observations, again removing the "neither" constructions.

**FIGURE 4**

Finally, the data show that patentees in these claim construction disputes lost 229 of the lower court decisions, while winning only 85 lower court decisions. The patentee's success rate in the lower court cases that require a claim construction review on appeal is thus 27.1%.

And as a result of the Federal Circuit's claim construction decisions, the patentee lost in 154 cases, succeeded in 60 cases, and 46 cases were vacated and remanded. The success rate after appellate decision, removing the vacated decisions, was 28.0%.

### III. ANALYSIS

The data collected can provide insight into both (a) the current level of certainty in claim construction review on appeal and (b) whether this certainty is a product of deference or the Federal Circuit independently coming to its own "correct" conclusion. Both of these possibilities are explored, in light of the data collected, below.

### A. Certainty

The data suggests that there is a high level of overall certainty in claim construction appeals. The data shown in Figure 1 above confirms what other recent studies indicate, that the affirmance rate of claim construction is very high, currently 72.9%.<sup>29</sup> And Figure 1 indicates that the rate of affirmance has gradually increased over the past three-plus years.

This overall affirmance rate stays steady across various technologies as well. As reported above, the rate of affirmance for all three technology areas varies from 70.8% in mechanical technologies to 75.4% in biological and chemical technologies. These differences are not statistically significant.<sup>30</sup>

This high level of affirmance could be the product of deference. That is, even though the legal standard is *de novo*, the Federal Circuit may be observing, at least in part, as Anderson and Menell called it, “informal deference,” particularly after the Federal Circuit’s decision in *Phillips*.<sup>31</sup> To put it another way, the affirmance rate might be this high because the Federal Circuit is deferring heavily to the lower court’s claim construction.

### B. Correctness

However, the high rate of affirmance may be the product of the Federal Circuit arriving, independently, at the same claim construction as the lower court. That is, the affirmance rate is not due to deference, but instead to the Federal Circuit and lower court coming, under their independent analyses, to the same result. The question is how to tease out which is the case: is the high affirmance rate a product of deference or evidence of independent confirmation of the correct conclusion?

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29. See Anderson & Menell, *supra* note 7, at 6.

30. Using Pearson’s chi-squared test yields a P value of 0.7327, indicating the differences are not statistically significant. Pearson’s chi-squared test determines whether a difference is statistically significant. See generally MICHAEL O. FINKELSTEIN & BRUCE LEVIN, STATISTICS FOR LAWYERS 157–62 (2d ed. 2001) (describing Pearson’s chi-squared test). That is, the test measures the likelihood that the observed difference in percentages is too extreme to be caused by chance. *Id.*

31. See Anderson & Menell, *supra* note 7, at 6–7 (observing a high affirmance rate and characterizing it as “informal deference”).

One way to answer this question is to see if there is a difference between what the Federal Circuit concludes is correct and what the lower courts consider correct. If there is significant deviation between the type of cases the Federal Circuit affirms claim constructions in and those it does not, this deviation would suggest that the Federal Circuit is making an independent determination in these cases and not simply being deferential. That is, if the Federal Circuit is being only deferential, there would be no distinction in the types of cases it affirms; the affirmance rate would hold true across case categories.<sup>32</sup> But if this is not the situation, the Federal Circuit would appear to be making its own independent determination of correctness.

*1. Reviewing for correctness of the case's ultimate result*

One potential theory is that the Federal Circuit is affirming claim constructions in those cases where the claim constructions lead to the ultimate result—a patentee win or loss—that the Federal Circuit believes is correct. And the court changes claim constructions only in those cases where the court does not agree with the ultimate result in the underlying case.

To test this hypothesis, the circumstances surrounding the Federal Circuit's ultimate determination to affirm, reverse, or vacate and remand the case are here examined. After deciding whether the lower tribunal's claim construction is correct or not, the Federal Circuit makes an ultimate determination in light of this claim construction as to affirm, reverse, or vacate and remand the lower court's decision. A focus on the ultimate determination is grounded in the reality that a patent case is not just about the claim construction, but how the claim as construed interacts with the ultimate decision.<sup>33</sup> Broad construction may result in patentee wins if the issue is infringement, but such a construction results in patentee losses if the issue is invalidity.<sup>34</sup> Accordingly, the Federal Circuit

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32. Even if affirmances are distributed evenly across all types of cases, this could still be the product of independent determinations by the Federal Circuit. However, uneven distribution is a better indicator that more is at play than a high level of deference.

33. See *supra* note 1.

34. See, e.g., Jeffrey A. Lefstin, *The Formal Structure of Patent Law and the Limits of Enablement*, 23 BERKELEY TECH. L. J. 1141, 1146 n.25 (2008) ("The questions of validity, claim scope, and infringement are still connected in practice by the question of claim interpretation. The parties in suit tailor their claim interpretations to suit their arguments on infringement and validity; a broader claim is more likely to be infringed but less likely to be



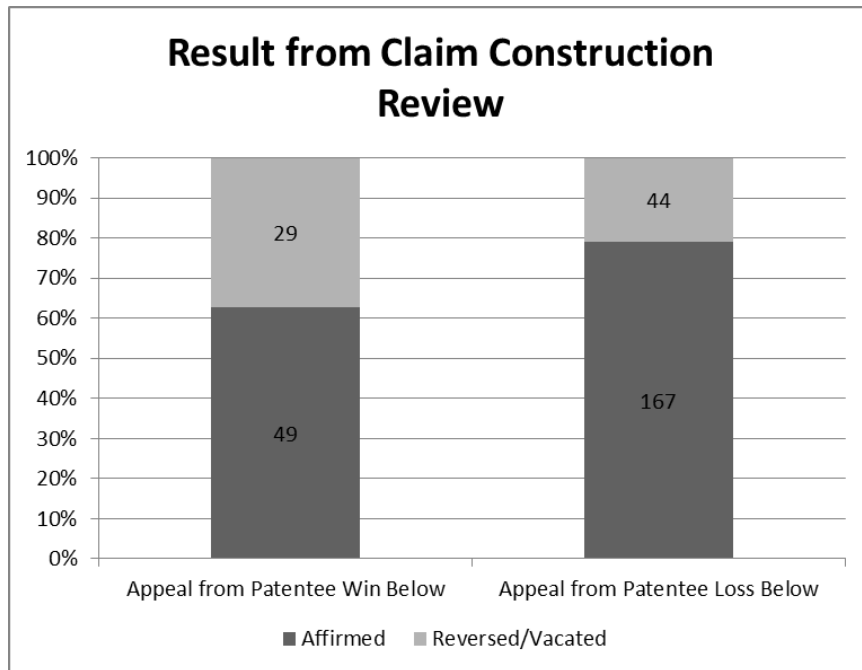
could be affirming those constructions that tend toward one result or another—a patentee win or loss—if the court is focused on the ultimate outcome of the case instead of simply deferring to the lower court.

Figure 5, below, reports the differential as to how the Federal Circuit decides appeals from patentee wins and losses below. Notably, reversals are grouped together with cases that were vacated and remanded—both suggesting, with varying degrees of strength, that the Federal Circuit did not agree with the lower court’s ruling. Furthermore, since the focus of this Article is on how claim construction review is tied to either deference or result, only vacated and remanded cases that are the result of the Federal Circuit reversing claim constructions are examined.<sup>35</sup>

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valid, and vice versa.”).

35. Only sixteen appeals resulted in an order to vacate and remand where the Federal Circuit affirmed the lower court’s claim construction. The Federal Circuit obviously disagreed with the outcome in those cases, but since the claim construction was affirmed, the court’s ability to change claim construction was not used as a tool to dictate a particular result in that case. Accordingly, these cases were not included in this analysis; they do not provide any insight into the court’s usage of claim interpretation review to correct ultimate outcomes.

**FIGURE 5**

Looking at Figure 5, the Federal Circuit appears to handle appeals from patentee wins below much differently than appeals from patentee losses below. The Federal Circuit, in 37.2% of appeals from patentee wins, changed the claim construction, and that change resulted in reversal or vacation and remand of the case. In contrast, the court, in 20.9% of appeals from patentee losses below, changed the claim construction, and that change resulted in reversal or vacation and remand of the case. This difference, between the handling of appeals from patentee wins as opposed to patentee losses below, is statistically significant.<sup>36</sup> And if vacated and remanded cases are removed, the reversal rate from patentee wins below is 27.9% (19 reversals compared to 49 affirmances), while the reversal rate from patentee losses below is 10.2% (19 reversals compared to 167 affirmances)—a statistically significant difference.<sup>37</sup>

36. Pearson's chi-squared test produces a P value of 0.00457, which indicates statistical significance at or beyond the .01 level. See FINKELSTEIN & LEVIN, *supra* note 30.

37. Pearson's chi-squared test produces a P value of 0.000453, which indicates statistical

These results could still be driven by deference—with appeals from patentee wins containing more egregious claim construction errors than patentee losses—but this is unlikely. The underlying error in a claim construction case, if there is one, should, under doctrines that govern claim interpretation, be divorced from outcome.<sup>38</sup> Claim interpretation is technically just a determination of claim meaning, something that would be just as likely to be done incorrectly in a patentee wins case as a patentee loses case. And given that a patentee win can be a result of either a broad claim construction, impacting infringement, or a narrow one, impacting validity, there is not necessarily a “type” of construction—broad versus narrow—that is more likely to be found in a patentee win than in a patentee loss. So, there is no systematic type of interpretation in patentee win cases that could be more prone to greater error than in patentee loss cases. These results are not driven by larger errors in claim constructions in patentee win cases. Accordingly, something more than just heightened deference is at play.

The Federal Circuit is coming to the opposite conclusion in these cases because it decides the lower court is not correct.<sup>39</sup> The Federal Circuit is more likely to reverse or vacate and remand a case where the patentee wins than one in which a patentee loses. It appears the Federal Circuit, in the cases appealed to the court, is more willing to change a case where the patentee wins. It appears that the Federal Circuit is not on the same page with lower courts in these cases as to what the correct result should be. The court is using claim interpretation review to correct what it perceives to be erroneous patentee wins below.

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significance at or beyond the .01 level. *See id.*

38. *See, e.g.,* SRI Int'l v. Matsushita Elec. Corp. of Am., 775 F.2d 1107, 1118 (Fed. Cir. 2005) (“A claim is construed in the light of the claim language, the other claims, the prior art, the prosecution history, and the specification, not in light of the accused device. . . . [C]laims are not construed ‘to cover’ or ‘not to cover’ the accused device. That procedure would make infringement a matter of judicial whim. It is only after the claims have been construed without reference to the accused device that the claims, as so construed, are applied to the accused device to determine infringement.” (citation omitted)).

39. *See, e.g.,* ArcelorMittal France v. AK Steel Corp., 700 F.3d 1314, 1321–22, 1326 (Fed. Cir. 2012) (finding that the district court reached the “incorrect claim construction”).

*2. Reviewing for correctness for the given technology at issue*

Another angle to explore in order to determine whether the Federal Circuit is simply deferring to lower courts in claim construction cases or is actually correcting certain results is to examine whether the technology at issue changes the Federal Circuit's review.<sup>40</sup> If the outcomes are only deference based, then the rate of affirmance or reversal should not change when technologies change.

As noted above, when looking at technology only, there appears to be no differences in the affirmance or reversal rate of claim interpretation. The only difference is a small one between the reversal rate for mechanical technologies (29.2%) and other technologies (both essentially 25%). The broad versus narrow construction breakdown is also essentially the same across technologies, as show in Figure 3, above.

But when the focus shifts to the ultimate outcome for a given technological area, differences appear. The Federal Circuit's decisions change, in light of the technology at issue, which outcomes are altered via claim construction reversals. To demonstrate this deviation, affirmances, reversals, and vacations were examined among the three technology groupings. These outcomes were observed for both appeals from patentee wins and patentee losses below. Figures 6, 7, and 8, below, report on the ultimate Federal Circuit decisions in claim construction appeals from patentee wins and patentee losses for each observed technology category.<sup>41</sup>

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40. Anderson and Menell noted that the Federal Circuit may be more suspicious of certain technologies, such as business methods. *See* Anderson & Menell, *supra* note 7, at 54.

41. As with Figure 5 above, only those vacate and remands resulting from the Federal Circuit's reversal of the district court's claim constructions were counted in Figures 6, 7, and 8.

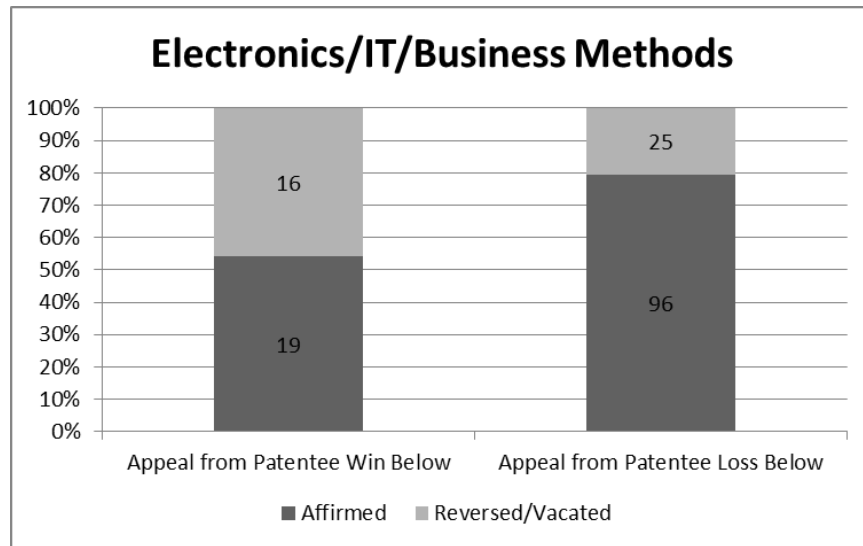


FIGURE 6

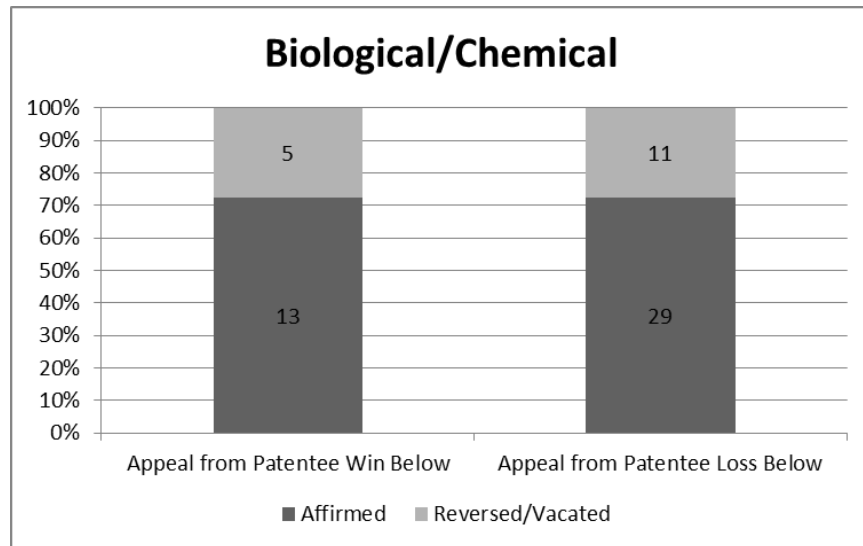


FIGURE 7

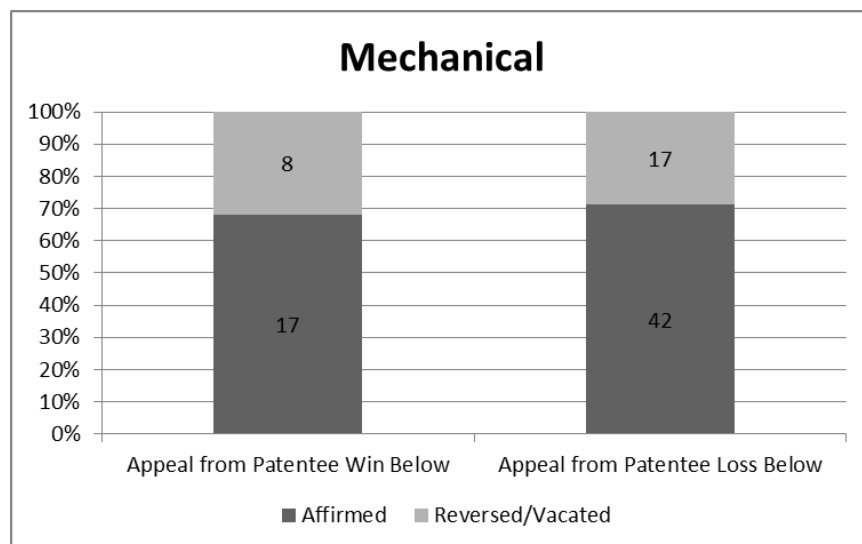


FIGURE 8

Notably, the technology at issue appears to make a difference when handling appeals from either patentee wins or losses below. The affirmed versus reversed/vacated rate remains essentially the same for both patentee wins and losses below for the biological, chemical, and mechanical technologies. However, for electronics, information technologies, and business methods, the affirmance rate is lopsided, with the Federal Circuit favoring patentee losses below. And this difference in the handling of patentee wins and patentee losses for this technology is statistically significant.<sup>42</sup>

Thus, for appeals from patentee wins below, the results change at the Federal Circuit depending on technology. For electronics, information technologies, and business methods, the Federal Circuit is more likely to reverse or vacate and remand a patentee win below as compared to other technologies on appeal.<sup>43</sup> The reversal rate for

42. Using a Fisher's exact test returned a P value of 0.00385, indicating statistical significance beyond the 0.01 level. A Fisher's exact test was used instead of the Pearson's Chi-Squared Test to measure statistical significance because of the small population size and the limited number of positives in the results being compared here. *See* GEORGE W. SNEDECOR & WILLIAM G. COCHRAN, *STATISTICAL METHODS* 126–27 (8th ed. 1989) (explaining that the Fisher's Exact Test is favored over the Chi-Squared Test for smaller expected frequencies).

43. A Fisher's exact test returned a P value of 0.1207. This is not statistically significant, but close to being significant at or beyond the 0.10 level.

patentee wins below in electronics, information technologies, and business methods technologies is about 50%. In comparison, the reversal rate is around 30% for the other technologies.

In contrast, the Federal Circuit affirmed patentee losses in electronics, information technologies, and business methods cases in 79.3% of the appeals while the other technologies are closer to 70%. This difference is further from statistical significance than the difference in appeals from patentee losses discussed above.<sup>44</sup> However, the descriptive difference in result is the same as that seen with the handling of claim constructions in appeals from patentee losses—electronic, information technology, and business method patentees fair worse at the Federal Circuit than other technologies in claim construction cases.

These differences could be explained as an exercise in deference if the errors are more egregious in appeals from patentee wins in electronic, information technology, and business method cases and much less egregious in appeals from patentee wins in biological and chemical and mechanical technology cases. And the difference could be further supported by the fact that biological, chemical, and mechanical claims are traditionally clearer and easier to construe as compared to electronic, information technology, and business method claims.<sup>45</sup> But if these were the reasons for the differential, they would hold true regardless of whether the patentee won or lost below. However, the unique lopsidedness for electronic, information technology, and business method cases in Figure 6 above refutes this conclusion. The data indicates that the results in these cases vary depending on who wins, not just the technology at issue.

Furthermore, the affirmance rate would not, as was observed, be higher in electronics and business method cases when the patentee wins. If the patents are harder to construe, they are harder to construe regardless of a patentee win or loss below. The overall affirmance rate is essentially the same across technologies; the rate changes only when the results below—whether the patentee won or not—are taken into account. And, as explained above, there is little foundation that the ultimate result has any relation to the difficulty of the underlying claim construction or any likelihood that there is

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44. A Pearson's chi-squared test returns a P value of 0.1884.

45. See JAMES BESSEN & MICHAEL J. MEURER, PATENT FAILURE: HOW JUDGES, BUREAUCRATS AND LAWYERS PUT INNOVATORS AT RISK 187–214 (2008).

significant error to overcome a high level of deference.

Instead, the data indicates that the Federal Circuit's review of claim construction is not all about deference, but changes depending on not only whether the patentee won or lost below, but also what type of technology is on appeal. The Federal Circuit appears to be reviewing with a certain "correct" result in mind—generally anti-patentee results focused mainly on electronic, information technology, and business methods patents.

### *3. Potential selection bias*

As others have observed, the results from appellate cases can be impacted by selection biases.<sup>46</sup> This bias can start by influencing the universe of patent disputes that make their way into district court as opposed to those that do not. Appellate cases are also possibly impacted by the type of case that makes its way to an appealable judgment as opposed to those that do not. And finally, there may be biases to which judgments are actually appealed versus those that are not.

The biases that may influence the data observed are those that may (a) prompt weaker patentee wins to be appealed, particularly weak wins in the electronic, information technology, and business method technology space; (b) prompt stronger patentee losses to be appealed across the technologies; and (c) prompt stronger patentee wins to be appealed in the other technologies. If any of these were present, they would skew the data and bring into question the observations above.

However, there are a number of reasons that suggest that these biases are not present or, if they are, that they would at best be influencing the data to 50/50 distributions.

First, the mixture of district court cases, which is the population appeals are selected from, should contain close claim construction cases or, at least, close cases overall.<sup>47</sup> The likelihood of success for either side—patentee or alleged infringer—should be about even.

Second, data suggests that claim constructions in patentee wins

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46. See Schwartz, *supra* note 10, at 242–43; Wagner & Petherbridge, *supra* note 1, at 1128–29.

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



and patentee losses are appealed at a similar rate. In order to see what the existing appeal distribution is, a sample of sixty-seven district court cases from the 722 patent cases that included a claim construction filed between January 1, 2008, and December 31, 2009, was taken using Lex Machina.<sup>48</sup> In these sixty-seven cases, the patentee's claim construction was adopted in fifteen cases, while the alleged infringer's was adopted in thirty-seven cases. The rest of the cases either involved mixed claim constructions—including both patentee and alleged-infringer proposed constructions—or were unclear as to whose construction, if anyone's, was adopted. Of the fifteen patent cases involving plaintiff-adopted constructions, seven (46.7%) were appealed. And for the thirty-seven alleged-infringer-adopted constructions cases, seventeen (45.9%) were appealed. Thus, the likelihood of appeal is about the same, regardless of which party succeeds on the claim interpretation issue below.

These findings rebut the possibility that patentee wins and patentee losses are appealed at different rates, perhaps because of the asymmetric consequences. If such a dichotomy were true, then defendants who lost on claim construction would mostly settle unless they were sure they could win on appeal, while patentees who lost on claim construction would always appeal. Accordingly, if this were true, we should expect to see fewer patentee wins on appeal. This could in turn influence the types and number of alleged-infringer appeals of patentee wins. However, as noted above, this underlying assumption that would drive this type of bias does not appear to exist.

Third, the originating district court does not appear to bias the results either. A linear regression shows that the specific district court whose construction is on appeal does not influence the ultimate outcome at the Federal Circuit.<sup>49</sup> A brief look at the data shows why. For example, claim constructions from the Eastern District of Texas, which some have called patent law's "renegade" district court,<sup>50</sup> are affirmed at a very high rate.<sup>51</sup>

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48. LEX MACHINA, <http://lexmachina.com> (last visited Sept. 22, 2014). Thank you to Mark Lemley for the suggestion to collect such data to dispel one possible source of bias.

49. Such a regression produces a P value of 0.976.

50. See Xuan-Thao Nguyen, *Justice Scalia's "Renegade Jurisdiction": Lessons for Patent Law Reform*, 83 TUL. L. REV. 111, 112 (2008).

51. Twenty-three out of twenty-eight appeals (82.1%) affirmed the Eastern District of Texas claim construction in the sample gathered.

Furthermore, as David Schwartz found, claim construction appeal rates did not change based on how “good” or “bad” a district court judge was at construing claims.<sup>52</sup> All of this indicates that the district court doing the construction is unlikely to present a selection bias problem.

Fourth, once the case goes to judgment and is appealed, it is just as likely to be appealed by either party. The current thinking is that claim construction review is truly de novo, and both parties have an equal chance of prevailing. While recent data and the data observed in this Article suggest otherwise, it is still the perception among patent litigators that claim construction is up for grabs on appeal.<sup>53</sup> All losing parties, therefore, have an incentive to appeal a district court’s claim construction. And thus, it is likely that both patentee wins and losses are appealed and that all cases involving claim constructions of all technologies are appealed.

Fifth, this “appeal every case” mentality is furthered by the relative low cost of a patent appeal as compared to the litigation exposure and cost. As Schwartz recognized:

The American Intellectual Property Law Association reports that the average cost of patent litigation in the district courts through the close of discovery (but not including the expense of trial) is \$5,000,000 for high damage cases and \$600,000 for lower damage cases. The amount of potential damages in dispute is typically much higher than that. These financial dynamics urge parties toward appealing most cases . . . .<sup>54</sup>

Once litigation costs are expended, by either the patentee or alleged infringer, an appeal is relatively inexpensive. And given

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52. Schwartz, *supra* note 10, at 283.

53. See Jeffrey A. Lefstin, *Claim Construction, Appeal, and the Predictability of Interpretive Regimes*, 61 U. MIAMI L. REV. 1033, 1037 (2007) (noting that “the notion that the reversal rate [in claim construction cases] is ‘too high’ has become firmly ingrained in the minds of commentators, practitioners, and judges alike, and is typically the first premise invoked in support of arguments to overhaul the current system of adjudicating patent infringement disputes” (footnotes omitted)); Xuan-Thao Nguyen, *Dynamic Federalism and Patent Law Reform*, 85 IND. L.J. 449, 486 n.245 (2010) (“There is a pervasive perception that the Court of Appeals for the Federal Circuit reverses district court rulings in patent cases at an inordinately high rate.”).

54. Schwartz, *supra* note 10, at 243.

either the potential reward or impending penalty, the chance of changing things on appeal is worth taking by any party in a case involving any technology.<sup>55</sup>

#### CONCLUSION

The data collected in this Article provides a more complete picture of Federal Circuit review of lower court claim construction. While clearly the overall affirmance rate is high and appears to still be gradually rising, these affirmances do not mean certainty across the board under the status quo. Appeals from patentee wins, particularly in the electronic, information technology, and business method technologies, are more likely to have their claim constructions reversed and ultimate results disturbed. This means that there is “correction” going on via claim construction review at the Federal Circuit, particularly for these types of cases.

Accordingly, a change in standard of review would have an impact, but one that would depend on the characteristics of the underlying appealed case. Greater certainty and less change on appeal, at least for these types of cases—patentee wins in the electronic, information technology, and business method technologies—would occur. The cost, however, would be the loss of the current correction taking place—reversal of these wins. Whether this is truly a cost, specifically one that outweighs certainty gained, is left for other articles and other discussion, as is the meta-question of what the “correct” answer is in any patent claim construction case.

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55. See Marc J. Pensabene & Thomas S. Gabriel, *To Sue or Not to Sue: Risks of Unlocking Value Through Patent Litigation*, 19 NO. 9 INTELL. PROP. & TECH. L.J. 18, 23 (2007) (“The high percentages of appeals and subsequent high appellate rate of overturning trial court decisions in patent cases should not be considered lightly.”).