Harvard Journal of Law & Technology
Volume 22, Number 2 Spring 2009

PATENT LAW UNIFORMITY?

*Lee Petherbridge**

TABLE OF CONTENTS

---

* Associate Professor of Law, Loyola Law School, Los Angeles. Thanks to Polk Wagner for comments on this study and invaluable help in establishing the project; to Doug Stenstrom for comments on earlier drafts and invaluable statistical advice; to Sasha Natapoff, Kurt Lash, Kimberly West-Faulcon, Brietta Clark, Linda Beres, John Golden, Chris Cotropia, Tim Holbrook, Dave Schwartz, Jeff Lefstin, Gary Pulsinelli, and the many scholars who participated at the 7th Annual Intellectual Property Scholars Conference at DePaul University College of Law, the 8th Annual Intellectual Property Scholars Conference at Stanford Law School, and the 61st Annual Meeting of the Southeastern Association of Law Schools for helpful comments concerning the project and earlier drafts; and to Kanita Viranond for valuable research assistance. Comments are appreciated: lee.petherbridge@lls.edu.

I. INTRODUCTION

In the throes of the difficult economic conditions of the 1970s,[1] the United States was forced to take stock of its economic strengths and weaknesses. As a contemporary of that process puts it: "it was recognized then . . . that our economic strength as a nation depends on technological leadership, a favorable balance of trade, and a culture that favors creativity, entrepreneurship, and industrial activity."[2] The view that eventually came to dominate was that government policies could be instrumental in encouraging these attributes, and that the law and policy of the patent system was important to establishing and nurturing a culture of technological entrepreneurship.[3]

Legislators of the time were confronted, however, with evidence that government policies were not as effective as they could be in encouraging technological entrepreneurship, and that the law and policy of patents particularly presented a problem. Representatives of technology-oriented businesses contended that the then-current patent law produced uncertainty that was harmful to innovation,[4] while research suggested that the legal infrastructure of the patent system was in disarray.[5] Studies from the period revealed marked diversity in patent adjudication between the various regional circuits,[6] as well as vigorous forum shopping[7] and wasteful collateral litigation.[8] Moreover, the

---

1. *See, e.g.*, Pauline Newman, *The Federal Circuit in Perspective*, 54 AM. U. L. REV. 821, 822 (2005) (mentioning "economic recession, high unemployment, mass layoffs of scientists and engineers, and extreme inflation").

2. *Id.* at 821; *see id.* at 822 (identifying the author as a member of the congressional subcommittee studying the patent system at the time).

3. *See id.* at 822–23.

4. *See, e.g.*, S. REP. NO. 97-275 at 6 (1981), *as reprinted in* 1982 U.S.C.C.A.N. 11, 16 (reporting the comments of Harry F. Manbeck, Jr., General Patent Counsel of the General Electric Company, who testified that doctrinal stability has an effect on innovation and that decreasing uncertainties is important to business decision-making).

5. *See id.* at 5, *as reprinted in* 1982 U.S.C.C.A.N. at 15 (reporting that "patent law [is] an area in which the application of the law to the facts of a case often produces different outcomes in different courtrooms in substantially similar cases").

6. *See* Rochelle Cooper Dreyfuss, *The Federal Circuit: A Case Study in Specialized Courts*, 64 N.Y.U. L. REV. 1, 7 (1989) (noting that patents were more "likely to be held valid and infringed in the Fifth Circuit than in the Seventh Circuit, and almost four times more likely to be enforced in the Seventh Circuit than in the Second Circuit" (citing Thomas Cooch, *The Standard of Invention in the Courts*, *in* DYNAMICS OF THE PATENT SYSTEM 34, 56–59 (William B. Ball ed. 1960))).

7. *See* S. REP. NO. 97-275 at 5, *as reprinted in* 1982 U.S.C.C.A.N. at 15 (discussing reports that forum shopping was common to patent litigation).

8. *See id.*, *as reprinted in* 1982 U.S.C.C.A.N. at 15 (discussing reports that forum shopping "increases the cost of litigation and 'demeans the entire judicial process and the patent system as well'" (quoting COMM'N ON REVISION OF THE FED. COURT APPELLATE SYS., STRUCTURE & INTERNAL PROCEDURES, RECOMMENDATIONS FOR CHANGE, *reprinted in* 67

prevailing view was that the Supreme Court did not have the resources or expertise to rectify the situation.[9]

Congress responded to these problems by enacting the Federal Courts Improvement Act of 1982,[10] which created the United States Court of Appeals for the Federal Circuit.[11] With respect to patent law, the Act unified jurisdiction over patent appeals, whether from the U.S. Patent and Trademark Office, the U.S. District Courts, the Court of Federal Claims, or the Court of International Trade, in one appellate court with national jurisdiction. As Congress saw it, enabling a single body of national precedents for patent law[12] would, among other things,[13] repair the legal infrastructure of the patent system by improving uniformity of doctrinal development,[14] and improving doctrinal stability[15] and predictability.[16]

Twenty-five years later, law professors Craig Nard and John Duffy now argue that Congress's idea for the Federal Circuit is failing, and, in fact, was doomed to failure from the beginning.[17] The

---

F.R.D. 370 (1975) (statement of Donald R. Dunner, President, American Intellectual Property Law Association))).

9. *See id.* at 3, *as reprinted in* 1982 U.S.C.C.A.N. at 13 ("The Supreme Court now appears to be operating at — or close to — full capacity; therefore, in the future the Court cannot be expected to provide much more guidance in legal issues than it now does."); *see also* Dreyfuss, *supra* note 6, at 6 (suggesting that patent cases may have been avoided by the Supreme Court due to the high level of legal and technical difficulty presented by the subject matter).

10. Pub. L. No. 97-164, 96 Stat. 25 (codified as amended in scattered sections of 28 U.S.C.).

11. *See* Dreyfuss, *supra* note 6 (considering the theoretical basis of the formation of the Federal Circuit); *see also* Charles W. Adams, *The Court of Appeals for the Federal Circuit: More than a National Patent Court*, 49 MO. L. REV. 43 (1984) (discussing the background and formation of the Federal Circuit).

12. *See* S. REP. NO. 97-275 at 2, *as reprinted in* 1982 U.S.C.C.A.N. at 11–12 (stating that one purpose of the Federal Courts Improvement Act of 1982 is "to improve the administration of the patent law by centralizing appeals in patent cases"); *id.* at 7, *as reprinted in* 1982 U.S.C.C.A.N. at 17 ("Decisions of this court will have precedential effect throughout the country . . . .").

13. The Act had a number of purposes and for that reason the Federal Circuit is not a "specialized court" as that term is so often, and pejoratively, used. Rather, Congress was express in stating the opposite: "The Court of Appeals for the Federal Circuit will not be a 'specialized court,' as that term is normally used. The court's jurisdiction will not be limited to one type of case, or even two or three types of cases . . . it will have a varied docket spanning a broad range of legal issues and types of cases." *Id.* at 6, *as reprinted in* 1982 U.S.C.C.A.N. at 16.

14. *See id.* at 5, *as reprinted in* 1982 U.S.C.C.A.N. at 15.

15. *Id.* at 5, *as reprinted in* 1982 U.S.C.C.A.N. at 15 ("[T]he Federal Circuit also provides a forum that will increase doctrinal stability in the field of patent law.").

16. *See id.* at 6, *as reprinted in* 1982 U.S.C.C.A.N. at 16.

17. *See* Craig Allen Nard & John F. Duffy, *Rethinking Patent Law's Uniformity Principle*, 101 NW. U. L. REV. 1619, 1627 (2007) (concluding the "key mistake" in the creation of the Federal Circuit was in "too easily concluding that if having thirteen appellate courts with jurisdiction over patent appeals created too much inconsistency and diversity, then the correct solution was to centralize all authority into one court"). *But see* Rochelle Cooper Dreyfuss, *In Search of Institutional Identity: The Federal Circuit Comes of Age*, 23 BERKELEY TECH. L.J. 787 (2008) [hereinafter Dreyfuss, *In Search of Institutional Identity*] (arguing

reason, they contend, is that Congress failed to understand that the lack of structural diversity imposed by the unification of appellate jurisdiction in a single court[18] ineluctably produces a lack of jurisprudential diversity.[19]

In the context of the critique, the claim of a lack of jurisprudential diversity is substantially an empirical one — a claim that there is a lack of noticeable heterogeneity in the course of the court's decision-making. It is derived in substantial part, however, from the application of the logical argument that the self-reinforcing characteristic of stare decisis imposes a harmful path dependency on patent jurisprudence. Applying the logic to the context of the Federal Circuit, the argument plays out as follows: Unification of appellate jurisdiction — which defines a lack of structural diversity — produces a single set of appellate-level precedents for patent law. Federal Circuit law holds that the published opinions of earlier panels are binding precedents for later panels. This creates an environment in which attorneys are less willing to raise issues that challenge precedent,[20] judges are less willing to challenge or rethink an existing rule set by another panel,[21] and, broadly stated, bad law developed in one-sided litigation[22] not only controls, but becomes irretrievably entrenched.[23]

---

that the Federal Circuit has made great strides in improving the adjudication of federal patent disputes and that it has struggled somewhat to keep patent law responsive to changing technological facts and emerging national interests); Rochelle Cooper Dreyfuss, *The Federal Circuit: A Continuing Experiment in Specialization*, 54 CASE W. RES. L. REV. 769, 770 (2004) [hereinafter Dreyfuss, *Continuing Experiment in Specialization*] ("Practitioners appear to be in general agreement that centralizing patent appeals in a single court is a vast improvement over regional adjudication.").

18. Jurisdiction for patent appeals in the Federal Circuit is not, strictly speaking, exclusive. *See* Holmes Group, Inc. v. Vornado Air Circulation Sys., Inc., 535 U.S. 826, 834 (2002) (returning jurisdiction over a subset of claims to the regional circuits). There is, however, no dispute that the Federal Circuit has heard the overwhelming majority of patent appeals since its creation in 1982.

19. *See* Nard & Duffy, *supra* note 17, at 1623 ("That very structure . . . discourages parties from challenging settled precedents of the court with different perspectives . . . ."); *id.* at 1630 ("But where the entire nation is covered by one circuit (as in the patent field), the rules of circuit precedent also foreclose opportunities for competing rationales and rules.").

20. *Id.* at 1630 ("[A]ttorneys appearing before the court may choose not to raise [an] issue because they estimate, correctly in many cases, the likelihood to be low that the court will rethink its established precedent."); *id.* at 1632–33, 1644 (claiming that in the context of a single circuit with Supreme Court review, a body of law is unlikely to change because "lawyers will likely be deterred" from challenging it).

21. *See id.* at 1630, 1632, 1633.

22. *Id.* at 1632 (describing the effect of poor lawyering on the development of precedent); *id.* at 1645–46 (describing the effect of mismatches in the skill of attorneys on the development of precedent). It is worth noting that the notion that many patent appeals reflect mismatches between the parties and might thus be more likely to produce "bad" law because of the superior advocacy of one side is controversial. *See* Dreyfuss, *supra* note 6, at 29 (noting that the court typically hears appeals involving relatively evenly-matched litigants).

23. *See* Nard & Duffy, *supra* note 17, at 1644–45. The notion that bad patent-related law becomes irretrievably entrenched because Federal Circuit panels go largely unchecked is controversial. The Supreme Court has granted certiorari to numerous cases decided by the Federal Circuit for patent-related issues. *See, e.g.*, Quanta Computer, Inc. v. LG Elecs., Inc.,

The ultimate consequence, it is argued, is not merely that the court's jurisprudence is increasingly homogeneous and populated with nearly irretrievably entrenched bad decisional law. The lack of structural diversity also compromises the efficient evolution of the law through common law mechanisms.[24] Thus, in facing examples of well-known heterogeneity in the course of the court's decisions, or openly controversial issues of decisional patent law,[25] Professors Nard and Duffy extend their argument to suggest that if the Federal Circuit

---

128 S. Ct. 2109 (2008); Microsoft Corp. v. AT&T Corp., 127 S. Ct. 1746 (2007); KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727 (2007); MedImmune, Inc. v. Genentech, Inc., 127 S. Ct. 764 (2007); eBay Inc. v. MercExchange, L.L.C., 126 S. Ct. 1837 (2006); Ill. Tool Works Inc. v. Indep. Ink, Inc., 126 S. Ct. 1281 (2006); Merck KGaA v. Integra Lifesciences I, Ltd., 545 U.S. 193 (2005); Holmes Group, Inc. v. Vornado Air Circulation Sys., Inc., 535 U.S. 826 (2002); Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 535 U.S. 722 (2002); J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc., 534 U.S. 124 (2001); Fla. Prepaid Postsecondary Educ. Expense Bd. v. Coll. Sav. Bank, 527 U.S. 627 (1999); Dickinson v. Zurko, 527 U.S. 150 (1999); Pfaff v. Wells Elecs., Inc., 525 U.S. 55 (1998); Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 520 U.S. 17 (1997); Markman v. Westview Instruments, Inc., 517 U.S. 370 (1996); Cardinal Chem. Co. v. Morton Int'l, Inc., 508 U.S. 83 (1993); Eli Lilly & Co. v. Medtronic, Inc., 496 U.S. 661 (1990); Dennison Mfg. Co. v. Panduit Corp., 475 U.S. 809 (1986) (per curiam).

The Federal Circuit has also taken a number of patent-related issues en banc over its history. *See In re* Bilski, 545 F.3d 943 (Fed. Cir. 2008) (en banc); Egyptian Goddess, Inc. v. Swisa, Inc., 543 F.3d 665 (Fed. Cir. 2008) (en banc); *In re* Seagate Tech., L.L.C., 497 F.3d 1360 (Fed. Cir. 2007) (en banc); DSU Med. Corp. v. JMS Co., 471 F.3d 1293 (Fed. Cir. 2006) (en banc); SmithKline Beecham Corp. v. Apotex Corp., 453 F.3d 1346 (Fed. Cir. 2006) (en banc); Phillips v. AWH Corp., 415 F.3d 1303 (Fed. Cir. 2005) (en banc); Knorr-Bremse Systeme Fuer Nutzfahrzeuge GmbH v. Dana Corp., 383 F.3d 1337 (Fed. Cir. 2004) (en banc); Honeywell Int'l Inc. v. Hamilton Sundstrand Corp., 370 F.3d 1131 (Fed. Cir. 2004) (en banc); Johnson & Johnston Assocs. Inc. v. R.E. Serv. Co., 285 F.3d 1046 (Fed. Cir. 2002) (en banc); Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 234 F.3d 558 (Fed. Cir. 2000) (en banc); Midwest Indus., Inc. v. Karavan Trailers, Inc., 175 F.3d 1356 (Fed. Cir. 1999) (en banc); Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448 (Fed. Cir. 1998) (en banc); *In re* Zurko, 142 F.3d 1447 (Fed. Cir. 1998) (en banc); Hilton Davis Chem. Co. v. Warner-Jenkinson Co., 62 F.3d 1512 (Fed. Cir. 1995) (en banc); Rite-Hite Corp. v. Kelley Co., 56 F.3d 1538 (Fed. Cir. 1995) (en banc); Markman v. Westview Instruments, Inc., 52 F.3d 967 (Fed. Cir. 1995) (en banc); *In re* Alappat, 33 F.3d 1526 (Fed. Cir. 1994) (en banc); *In re* Donaldson Co., 16 F.3d 1189 (Fed. Cir. 1994) (en banc); A.C. Aukerman Co. v. R.L. Chaides Constr. Co., 960 F.2d 1020 (Fed. Cir. 1992) (en banc); *In re* Dillon, 919 F.2d 688 (Fed. Cir. 1990) (en banc); Beatrice Foods Co. v. New England Printing & Lithographing Co., 899 F.2d 1171 (Fed. Cir. 1990) (en banc); Aerojet-Gen. Corp. v. Mach. Tool Works, Oerlikon-Buehrle Ltd., 895 F.2d 736 (Fed. Cir. 1990) (en banc); Racing Strollers, Inc. v. Tri Indus., Inc., 878 F.2d 1418 (Fed. Cir. 1989) (en banc); Kingsdown Med. Consultants, Ltd. v. Hollister, Inc., 863 F.2d 867 (Fed. Cir. 1988) (en banc); Pennwalt Corp. v. Durand-Wayland, Inc., 833 F.2d 931 (Fed. Cir. 1987) (en banc); Woodard v. Sage Prods., Inc., 818 F.2d 841 (Fed. Cir. 1987) (en banc); Wyden v. Comm'r of Patents & Trademarks, 807 F.2d 934 (Fed. Cir. 1986) (en banc); Sri Int'l v. Matsushita Elec. Corp., 775 F.2d 1107 (Fed. Cir. 1985) (en banc); *In re* Bennett, 766 F.2d 524 (Fed. Cir. 1985) (en banc); Paulik v. Rizkalla, 760 F.2d 1270 (Fed. Cir. 1985) (en banc); *In re* Etter, 756 F.2d 852 (Fed. Cir. 1985) (en banc); Atari, Inc. v. JS & A Group, Inc., 747 F.2d 1422 (Fed. Cir. 1984) (en banc).

24. *See* Nard & Duffy, *supra* note 17, at 1629–35, 1653–54.

25. *See id.* at 1655–64.

had not been created these issues might have been already resolved, been headed off, or at least be closer to an intelligent resolution.[26]

The problem of a lack of diversity in patent jurisprudence, the argument goes, demands a remedy that restores diversity. To that end, the following prescription is offered: Increase the number of judges that regularly hear patent appeals.[27] Packing more judges into the jurisdiction and dispersing them to other circuits should favorably alter the judicial balance in patent jurisprudence by encouraging judges to compete with one another and to use their writings to select diverse positions in policy debates.[28] The freedom of judicial pronouncements to contain diverse legal views, as well as the greater formal force of the additional views should, it is argued, produce volatility — conflict and controversy — in the law that is helpful to appellate judges and to the high court as well.[29]

The proposal is not without its challengers. The *Northwestern University Law Review*, which provided a forum to Nard and Duffy, allowed for a response coauthored by Senior Circuit Judge Plager and Lynne Pettigrew.[30] They characterize the Nard and Duffy proposal as a "solution in search of a problem,"[31] and observe that the professors made "no showing"[32] of their foundational empirical supposition that

---

26. *See id.* at 1656 (claim construction); *id.* at 1660–61 (obviousness); *id.* at 1664 (written description).

27. *Id.* at 1625 ("We propose that, in addition to the Federal Circuit, at least one extant circuit court should be allowed to hear district court appeals relating to patent law."); *id.* at 1675 (proposing "two or three additional circuit courts").

28. *See id.* at 1646 ("A known antidote for path dependency is to have multiple intermediate appellate courts that are *not* obligated to follow each other's precedents, coupled with a Supreme Court that has control over its docket and can therefore wait for issues to 'percolate' among those multiple courts before final review is granted.").

29. The prescription comes with the caveat that it does not mean to laud diversity above everything else. Reform should be careful to avoid too much diversity. *Id.* at 1624 ("Excessive decentralization almost certainly marked the pre-1982 appellate system, which had twelve regional circuit courts judging infringement cases, plus the Court of Customs and Patent Appeals (CCPA) holding jurisdiction over agency appeals."). Rather, diversity and competition should be increased from its current negligible level to one that is just right to optimize controversy and conflict. *Id.* at 1624. But the optimal level of diversity should not be exceeded, as it was when judges from all of the numbered circuits could entertain a patent claim in a complaint. *Id.*

30. S. Jay Plager & Lynne E. Pettigrew, *Rethinking Patent Law's Uniformity Principle: A Response to Nard and Duffy*, 101 NW. U. L. REV. 1735 (2007). The response effectively makes a number of points, including arguments on the purpose and function of contemporary federal courts, *see id.* at 1742, decision-making, and arguments on the fairness and correctness of deciding cases based on information not emphasized by the parties and not vetted by the adversarial process, *id.* at 1742–43. There is a breadth of opinion on the current role of the Federal Circuit in the patent system. *See* Dreyfuss, *In Search of Institutional Identity*, *supra* note 17, at 788–91.

31. Plager & Pettigrew, *supra* note 30, at 1739 (emphasizing the lack of empirical support for the Nard and Duffy claim).

32. *Id.* at 1756 ("There is no showing that the process of airing diverse views and exposing alternative approaches would be carried forward more thoughtfully and to better purpose in a milieu of multiple courts and thirty or forty judges than it currently is with one court with sixteen judges . . . .").

the current institutional arrangements cause a lack of jurisprudential diversity

For their part, Nard and Duffy concede the lack of empirical support[33] but do not eschew the idea that an empirical approach could be useful in providing evidence material to whether their proposal is a good idea.

So is the Federal Circuit, as Nard and Duffy contend, insular? Is its body of law impoverished in terms of competing points of view? Or is the court, as Plager and Pettigrew contend, "broad and diverse"[34] and capable of giving voice to competing understandings of law? Put more generally, can an appellate court that has responsibility for nearly all of the cases relating to a particular subject matter have diversity in its jurisprudence?

Due to its centrality to the Nard and Duffy critique, the study presented here focuses on the question of lack of jurisprudential diversity. It is not, after all, a lack of structural diversity per se that is deemed most harmful. Rather, the most substantial concern follows from the logical argument that a lack of structural diversity implies a lack of jurisprudential diversity — an undesirable set of facts and consequences within the subject body of law. Thus, addressing the claim of lack of jurisprudential diversity should be most useful in assessing the strength of the critique. In this light, it is easy to accept for the moment that there is a lack of structural diversity.[35]

Through the results of a novel empirical study of Federal Circuit performance, this Article makes two main contributions to the debate surrounding the efficacy of the administration of the patent system and also has implications for the more general debate concerning centralized versus dispersed jurisdiction.[36] First, a systematic empirical examination of all judicial pronouncements concerning the widely applied "doctrine of equivalents"[37] produces evidence that the Federal Circuit does not lack for jurisprudential diversity. Although the results cannot paint a complete picture of whether there is, normatively, "optimal" diversity in patent jurisprudence, the weight of the evidence

33. Nard & Duffy, *supra* note 17, at 1625 ("We do not want to . . . suggest that there is empirical support for [restructuring jurisdiction].").

34. Plager & Pettigrew, *supra* note 30, at 1740 & nn.27–28 (arguing that the court is broad and diverse in terms of jurisdiction and judicial constitution).

35. Nard & Duffy, *supra* note 17, at 1639–41 (arguing that the Federal Circuit "has no effective peer or competitor"). *But see infra* Part IV.2 (taking some issue with the idea that the legal infrastructure of the patent system is constructed in such a way that other players are substantially incapable of injecting views and arguments).

36. An in depth discussion of this general debate is beyond the scope of this Article. The main point is that to the extent the Federal Circuit represents an experiment in centralized jurisdiction, the results presented in this piece could be useful in assessing proposals to centralize jurisdiction for other areas of law (e.g., immigration cases) or useful in assessing other situations where centralized jurisdiction is currently used.

37. For a primer on the doctrine of equivalents, see *infra* Part II.B.

presented in the following pages suggests the interpretation that Federal Circuit patent jurisprudence does not lack noticeable heterogeneity in its decisions. Indeed, the results of this study at least allow for the opposite interpretation: Federal Circuit jurisprudence might be too diverse. Parties to a run-of-the-mill patent litigation might have too many arrows in their quivers, not too few. What the Federal Circuit might really need to do is clean up some of the deadwood in its case law, not add more.

Second, the results of this study provide the basis for a different and perhaps more encouraging perspective on the nature of Federal Circuit decision-making. The presence of large numbers of written opinions with significantly different outcomes suggests that Federal Circuit decisions in the area of law studied are not characterized by irretrievably entrenched broad-rule precedents. The grip of path dependency seems not to be so strong as to force judges to march in lock-step with one another. Instead, Federal Circuit decision-making could be more accurately characterized as finer-grained, and populated by opinions that might be described as numerous, specific, loosely governed, and not generally amenable to broad reading. This description finds consonance with the undisputed technological variety of contemporary patent cases,[38] existing empirical literature,[39] and the public representations of some of the judges that seem to suggest that what is involved in most cases is the case-specific interpretation of mostly settled — and often, congressionally set — standards.[40]

In sum, the picture of the Federal Circuit perhaps most consonant with the results of this study is one of a court quite tolerant of jurisprudential diversity and in which judges are — in the context of their own experiences and biases — simply deciding cases based on their judgments of the merits of the particular matters that they are required to decide. This description of patent jurisprudence suggests that the Federal Circuit might be less broadly prescriptive with respect to rules and policy than some expected it to be. Its decision-making may be more realism-oriented than previously understood, may permit more decisional flexibility, and may reflect more respect for judges and their judgments vis-à-vis absolute rules.

The concluding remarks speculate, inter alia, that this framework might reflect a sensible approach to developing patent law. On the one hand, patents have enough of the attributes that attend property to be

---

38. *See* John R. Allison & Mark A. Lemley, *The Growing Complexity of the United States Patent System*, 82 B.U. L. REV. 77, 79–80 (2002); Nard & Duffy, *supra* note 17, at 1623, 1654.

39. *See* R. Polk Wagner & Lee Petherbridge, *Is the Federal Circuit Succeeding? An Empirical Assessment of Judicial Performance*, 152 U. PA. L. REV. 1105, 1111–12 (2004) (showing the development and variety of approaches to claim construction).

40. Plager & Pettigrew, *supra* note 30, at 1738; Nard & Duffy, *supra* note 17, at 1648 n.102 (citing the remarks of Circuit Judge Lourie).

conventionally understood as a kind of property[41] — a fact that might argue for less volatility in the rules defining the scope of rights than in some other areas of law. On the other hand, patent law must account for widely varying technological and market contexts and for rights that can occasionally confer dominating power and deeply affect the public interest. In adopting a "small-law" framework — one that emphasizes decisions of modest precedential value, and which might "wobble" around a nucleus of standards — the Federal Circuit may be resisting very strong formal constraints to its decision-making. This strategy could allow the court the flexibility to reach what it sees as the "right" result in most cases, but could still promote uniformity of doctrinal development by utilizing a judiciary that is highly skilled and capable of great nuance in interpreting patent law,[42] and by limiting major formal changes to relatively punctuated and (often) well-noticed schedules[43] like en banc process, Supreme Court review,[44] and legislative development.

This Article proceeds in three main parts. Part II describes the study design and methodology, including an explanation of the techniques employed and some of their limitations. Part III presents the results, and provides an analytical discussion of what evidence they provide concerning diversity. Part IV offers some concluding remarks and possible directions for future work.

---

41. *See* 35 U.S.C. § 154(a)(1) (2006) ("Every patent shall contain . . . a grant to the patentee, his heirs or assigns, of the right to exclude others from making, using, offering for sale, or selling . . . or importing the invention . . . ."); *id.* § 261 ("Subject to the provisions of this title, patents shall have the attributes of personal property."); Transparent-Wrap Mach. Corp. v. Stokes & Smith Co., 329 U.S. 637, 643 (1947) (stating that "[a] patent is a species of property. It gives the patentee or his assignee the 'exclusive right to make, use, and vend the invention or discovery' for a limited period"); Consol. Fruit-Jar Co. v. Wright, 94 U.S. 92, 96 (1877) ("A patent for an invention is as much property as a patent for land. The right rests on the same foundation, and is surrounded and protected by the same sanctions. There is a like larger domain held in ownership by the public. Neither an individual nor the public can trench upon or appropriate what belongs to the other."). *See generally* JAMES BESSEN & MICHAEL J. MEURER, PATENT FAILURE: HOW JUDGES, BUREAUCRATS, AND LAWYERS PUT INNOVATORS AT RISK 6–8 (2008) (summarizing differences and similarities between patents and tangible property).

42. *See* Marcia Coyle, *Critics Target Federal Circuit*, NAT'L L.J., Oct. 16, 2006, at 1, 20 ("[T]hose who follow the court closely generally give it high marks for being a very hard-working court with very dedicated, smart judges.").

43. The court does not realize all of its major jurisprudential changes in such a deliberate manner. Cases that present issues of first impression can produce abrupt jurisprudential change, as can the addition of new judicial personnel. *See* Wagner & Petherbridge, *supra* note 39, at 1111.

44. It is worth noting that the Supreme Court may not be the best source of major formal doctrinal change in the patent law. *See* John M. Golden, *The Supreme Court as "Prime Percolator": A Prescription for Appellate Review of Questions in Patent Law*, 56 UCLA L. REV. 657 (2009) (arguing that because of the Supreme Court's limited competence in this area it should be reluctant to provide new doctrinal formulas, or bring a conclusive end to substantive debates in patent law).

II. STUDY DESIGN AND METHODOLOGY

The overall design of the study is straightforward. It relies on a technique for the systematic reading and analysis of texts known as "content analysis." The basic approach taken is to systematically categorize (or "code") judicial opinions and to utilize the data that results from the coding to empirically analyze the jurisprudence. The study applies the technique to gather information from appellate opinions deciding a widely-applied body of patent doctrines falling generally under the label "doctrine of equivalents."[45]

As discussed in more detail later, the empirical evidence reported in this study comes from the application of several statistical techniques.[46] Some are simple descriptive statistical techniques, such as graphical representations; others are more complex statistical arguments such as the chi-square test, used here to explore diversity in relationships between judges, doctrinal content, and certain major response variables.[47] The study uses various forms of regression analysis for the same purpose and to more specifically describe the relationships in connection with whether they provide evidence of diversity.

This study also uses the argument that certain results are *statistically significant*. As used here, statistical significance describes whether the observed results are likely due to chance, and is indicated by the letter *p* (which stands for probability). Any *p-value* of .05 or less identifies results considered statistically significant — evidence that the probability they are due to chance is 5% or lower. Values less than .1 are considered marginal, indicating that the probability that the observed results are due to chance is less than 10%.

The remainder of this Part provides additional information about the study design and methodology. Section A provides an introduction to content analysis. Section B provides a brief primer on the doctrine of equivalents, the main jurisprudential substrate for this study. Section C provides a description of the construction of the database, and Section D describes the measurement criteria.

---

45. For a primer on this doctrine, see *infra* Part II.B.

46. The software used for the majority of statistical calculations includes SPSS 16.0 and Microsoft Excel. The graphical representations are produced with Chartsmith.

47. The major response variables are described in detail in the introduction to Part III, *infra*. In general terms, the variables measure the rate at which the Federal Circuit affirms lower court decisions, the rate at which patentees are successful on appeal, and the rate at which patentee success on appeal reflects a final dispositive victory.

A. Content Analysis

Content analysis refers to the systematic reading and analysis of texts.[48] The approach can be applied to most texts, including judicial opinions. In contrast to more traditional forms of legal scholarship, the approach seeks a comprehensive, objective understanding of a body of law as opposed to an interpretation of judicial opinions that are viewed as symbolic or important: "Content analysis allows scholars to verify, analyze, or refute the empirical claims about case law that are implicit or explicit in all branches of legal scholarship."[49] A basic and well-accepted strategy for the use of content analysis in legal studies follows that employed here: selecting cases, coding cases, counting case contents, and analyzing case coding.[50]

Using judicial opinions as a dataset naturally imports a set of well-recognized biases. The most important of which affect not only content analysis, but also more traditional interpretive forms of legal scholarship. These include unobserved reasoning, strategic behavior, and selection bias.[51] Some types of disputes may be less likely to reach trial. Of those that are tried, some will not be appealed, but if appealed may not generate an opinion.[52] Others may generate only an unpublished opinion,[53] which may affect the scope or depth of analysis that the court will provide. And, even when opinions are published, their contents may reflect the product of strategic behavior.

There is little question that these potential limitations exist to some degree in the study underlying this Article. And, while they

---

48. For an article describing content analysis with a view to its application to legal studies, see Mark A. Hall & Ronald F. Wright, *Systematic Content Analysis of Judicial Opinions*, 96 CAL. L. REV. 63 (2008). For some examples of legal scholarship that have used content analysis as an approach to examining a body of law, see John R. Allison & Mark A. Lemley, *The (Unnoticed) Demise of the Doctrine of Equivalents*, 59 STAN. L. REV. 955 (2007); Christopher A. Cotropia, *Nonobviousness and the Federal Circuit: An Empirical Analysis of Recent Case Law*, 82 NOTRE DAME L. REV. 911 (2007); Lee Petherbridge & R. Polk Wagner, *The Federal Circuit and Patentability: An Empirical Assessment of the Law of Obviousness*, 85 TEX. L. REV. 2051 (2007); David L. Schwartz, *Practice Makes Perfect? An Empirical Study of Claim Construction Reversal Rates in Patent Cases*, 107 MICH. L. REV. 223 (2008); Wagner & Petherbridge, *supra* note 39.

49. Hall & Wright, *supra* note 48, at 77.

50. *Id.* at 66.

51. *See* Wagner & Petherbridge, *supra* note 39, at 1128–30. Analyzing the content of judicial opinions relies on the assumption that the facts and reasoning that appear in an opinion accurately reflect those from the underlying case. This assumption may not always hold true given that opinion authors may be less concerned with recreating the underlying facts and reasoning than justifying their conclusion "by showing that it proceeds from accepted sources by legitimate, properly argued steps." Edward L. Rubin, *The Concept of Law and the New Public Scholarship*, 89 MICH. L. REV. 792, 801 (1991).

52. *See, e.g.*, FED. CIR. R. 36 ("The court may enter a judgment of affirmance without opinion, citing this rule, when it determines that any of the following conditions exist and an opinion would have no precedential value . . . .").

53. *See, e.g.*, FED. CIR. R. 32.1 (permitting citation to "unpublished" or "nonprecedential" opinions and orders).

should be kept in mind, they should not be overemphasized. The source of information relied upon in this sort of study — judicial opinions — is essentially the same source that is traditionally relied upon by legal scholars and patent system participants on a day-to-day or case-by-case basis. Taking a comprehensive approach to the examination of that information can provide benefits that outweigh the limitations of the approach and can avoid some of the limitations presented by using more traditional approaches to legal scholarship.[54]

B. Primer on the Doctrine of Equivalents

The doctrine of equivalents is especially well-suited to this study. It is widely known and discussed among legal scholars.[55] It is also widely applied, providing ample numbers of opinions.[56] Moreover, at its basic conceptual level it is very easy to understand, even for those not well versed in patent law, property law, or torts. In general terms, the doctrine of equivalents is, as one of my colleagues recently and very accurately put it, a "close enough" doctrine.[57] It determines whether an accused infringer's conduct, while not infringing the letter of a patent, may still be enjoined because it is close enough to the letter of a patent. Because this study utilizes judicial opinions applying this doctrine, the following paragraphs give a more detailed description of its content.

As a general matter, the U.S. patent system is founded on the normative principle that giving to inventors the exclusive right[58] to make, use, sell, and import[59] their inventions should promote social welfare in the United States. Used in this context, "invention" refers

54. *See generally* Hall & Wright, *supra* note 48 (assessing the merits of content analysis).

55. There is consequently significant scholarship concerning the doctrine of equivalents. A small list of examples includes Charles W. Adams, *The Doctrine of Equivalents: Becoming a Derelict on the Waters of Patent Law*, 84 NEB. L. REV. 1113 (2006); Allison & Lemley, *supra* note 48; Douglas Lichtman, *Rethinking Prosecution History Estoppel*, 71 U. CHI. L. REV. 151 (2004); Douglas Lichtman, *Substitutes for the Doctrine of Equivalents: A Response to Meurer and Nard*, 93 GEO. L.J. 2013 (2005); Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839 (1990); Michael J. Meurer & Craig Allen Nard, *Invention, Refinement and Patent Claim Scope: A New Perspective on the Doctrine of Equivalents*, 93 GEO. L.J. 1947 (2005); Paul R. Michel, *The Role and Responsibility of Patent Attorneys in Improving the Doctrine of Equivalents*, 40 IDEA 123 (2000); S. Jay Plager, *Challenges for Intellectual Property Law in the Twenty-First Century: Indeterminacy and Other Problems,* 2001 U. ILL. L. REV. 69; R. Polk Wagner, *Reconsidering Estoppel: Patent Administration and the Failure of* Festo, 151 U. PA. L. REV. 159 (2002); Harold C. Wegner et al., *The Future of the Doctrine of Equivalents*, 26 AIPLA Q.J. 277 (1998).

56. *See* Allison & Lemley, *supra* note 48, at 977 (stating that "a patentee is almost always arguing the doctrine of equivalents as an alternative to a theory of literal infringement"); *infra* Part II.C (reporting that the Federal Circuit has decided 991 equivalents analyses in its written opinions in the last fifteen years).

57. Thanks to Dan Schechter for the phrasing of this simple conceptual handle.

58. U.S. CONST. art. I, § 8, cl. 8.

59. 35 U.S.C. § 271 (2006).

to the subject matter defined by the claims of a valid U.S. Patent.[60] Because the boundaries of a patentee's right to exclude are thus set, patent doctrine contains the following mantra: A determination of infringement is a two-step analysis. "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."[61]

This approach to assessing liability for patent infringement allows some putative infringers to avoid liability by making or practicing something that is not literally the claimed invention, but is instead something very close to it. By making insubstantial modifications a putative infringer can avoid the literal reach of the claims, but still appropriate the substance of the invention.[62] This strategy may be available to a competitor because words are not a perfect way in which to describe the boundaries of patented subject matter,[63] a patentee may mistakenly fail to claim all commercially useful embodiments, or future technological advances may make unforeseen, and therefore unclaimed, embodiments practicable.

Courts have long recognized this possibility[64] and have developed the doctrine of equivalents specifically to deal with it. In a leading case, *Graver Tank & Mfg. Co. v. Linde Air Products Co.*,[65] the Supreme Court set forth the policy implicated by the doctrine: to protect the incentive structure of the patent system. The Court reasoned that allowing putative infringers to escape liability by making trivial changes would discourage potential innovators, as well as discourage "unscrupulous copyist[s]" from pursuing innovations of their own.[66] Thus, the court reasoned, the doctrine of equivalents should exist to prevent "fraud on a patent."[67]

There is a robust history of equivalents-specific jurisprudence. In general terms, however, equivalents-specific jurisprudence has pro-

60. *See* Phillips v. AWH Corp., 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) ("It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.'" (quoting Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc., 381 F.3d 1111, 1115 (Fed. Cir. 2004))). The patent statute is consistent with this requirement in that it requires claims to "particularly point[] out and distinctly claim[] the subject matter which the applicant regards as his invention." 35 U.S.C. § 112.

61. Carroll Touch, Inc. v. Electro Mech. Sys., Inc., 15 F.3d 1573, 1576 (Fed. Cir. 1993).

62. This is a nice example of the patent gamesmanship played with the meaning of the term "invention." As used here the term "invention" sheds to a degree its more formal definition of the thing claimed for a more conceptual definition woven with notions of either "inventive contribution" or "essence of invention."

63. *See* Clarisa Long, *Information Costs in Patent and Copyright*, 90 VA. L. REV. 465, 468, 470 (2004).

64. *See* Winans v. Denmead, 56 U.S. (15 How.) 330, 333–35 (1853).

65. 339 U.S. 605 (1950).

66. *See id.* at 607.

67. *Id.* at 608.

ceeded on two basic fronts. The first is the development of *equivalents-specific infringement standards*. These standards govern the comparison between a patent and an accused device. In the doctrinal framework of the patent law, these standards are "factual" in quality. That is, they typically present questions that must be resolved by a fact finder and receive the relevant form of deference on review by the Federal Circuit. The two major standards — and those scored for in this study — are known as the "function-way-result" test[68] and the "insubstantial differences" test.[69]

The second front in the development of equivalents-specific jurisprudence is the development of a set of *equivalents-specific legal limitations*. These legal limitations restrict as a matter of law the scope of equivalents that a patentee may assert. In the doctrinal framework of the patent law, these legal limitations are solely judge operable, are "legal" in quality, and receive no deference on review by the federal circuit. Most of them work as an extension of the judicial process of defining the metes and bounds of the patented property. There are a number of equivalents-specific legal limitations. A conventional list would include the following doctrines: amendment-based prosecution history estoppel,[70] argument-based prosecution history estoppel,[71] the All Elements Rule,[72] the prohibition against a scope of equivalents that encompasses prior art,[73] the prohibition

68. *See id.* at 608–10 (confirming this test for analyzing the doctrine of equivalents).

69. *See* Hilton Davis Chem. Co. v. Warner-Jenkinson Co., 62 F.3d 1512, 1518 (Fed. Cir. 1995) (en banc) (reconsidering the teachings of *Graver Tank*, 339 U.S. 605, and concluding that the "application of the doctrine of equivalents rests on the substantiality of the differences between the claimed and accused products or processes"), *rev'd*, 520 U.S. 17 (1997).

70. This legal limitation seeks to prevent the patentee from recapturing through the doctrine of equivalents subject matter surrendered during patent prosecution, *see, e.g.*, Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 520 U.S. 17 (1997), by claim amendment, *see, e.g.*, Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 535 U.S. 722, 725 (2002) (adopting rebuttable presumption that a narrowing amendment surrenders an equivalent), or cancellation, *see, e.g.*, Honeywell Int'l Inc. v. Hamilton Sundstrand Corp., 370 F.3d 1131 (Fed. Cir. 2004) (en banc) (stating that cancelling an independent claim and rewriting a dependent claim into independent form creates presumption of estoppel).

71. This legal limitation seeks to prevent the patentee from recapturing through the doctrine of equivalents subject matter surrendered during patent prosecution by claim argument, s*ee* Cybor Corp. v. FAS Techs., Inc. 138 F.3d 1448, 1460 (Fed. Cir. 1998) (en banc) (recognizing estoppel by argument made during prosecution).

72. This legal limitation requires that infringement be examined by an element-by-element or limitation-by-limitation comparison between the accused device and the claimed subject matter. If a claim element is not present literally or equivalently in an accused device, infringement cannot lie. *See* Pennwalt Corp. v. Durland-Wayland, Inc., 833 F.2d 931, 935, 939 (Fed. Cir. 1987) (en banc). The Supreme Court expanded on the application of the principle in *Warner-Jenkinson*, 520 U.S. at 29 (holding that the doctrine of equivalents should not be applied so broadly as to effectively eliminate a claim element); *id.* at 39 n.8 ("Thus, under the particular facts of a case . . . if a theory of equivalence would entirely vitiate a particular claim element, partial or complete judgment should be rendered by the court, as there would be no further *material* issue for the jury to resolve.").

73. This legal limitation seeks to prevent a patentee from capturing through the doctrine of equivalents subject matter that is in the prior art and would presumably have been unpat-

against a scope of equivalents that encompasses subject matter disclosed but not literally claimed in a patent specification,[74] and the limitation of the doctrine of equivalents in some cases to after-arising technologies.[75]

Because this study looks for evidence of diversity in the application of these doctrines in connection with certain major response variables, and in the hands of various judges and groups of judges, identifying them is sufficient. To the extent that a more detailed explanation is necessary, it will be provided in the context of the relevant discussion.

C. Database Construction

The dataset used in this study includes all observable Federal Circuit analyses deciding the doctrine of equivalents over a roughly fifteen year period spanning January 1, 1992 to May 2, 2007.[76] The dataset was assembled from a search of the LEXIS *Federal Circuit — US Court of Appeals Cases* database. Using no date restrictions, the following terms were searched:

> patent! and equivalent! and ("prosecution history estoppel" or "file wrapper" or "estoppel" or "all elements" or "vitiate" or "vitiation" or "dedicate" or "dedication" or "disclaim" or "disclaimed" or "disavow" or "disavowal" or "graver tank" or "hilton" or "warner-jenkinson" or "festo" or "doctrine") and not name (in re) and not "sec'y"

The search returned 1235 cases. The data set was then truncated to the above described date ranges, and manually screened for a decisions on the doctrine of equivalents. Using this approach, cases directed to the reverse doctrine of equivalents were excluded,[77] as well as all other cases not deciding the doctrine of equivalents.

---

entable in the first instance. *See* Wilson Sporting Goods Co. v. David Geoffrey & Assocs., 904 F.2d 677, 683 (Fed. Cir. 1990).

74. This legal limitation seeks to prevent a patentee from capturing through the doctrine of equivalents subject matter disclosed in its patent, but not literally claimed. *See* Johnson & Johnston Assocs. v. R.E. Serv. Co., 285 F.3d 1046, 1072 (2002) (en banc).

75. This legal limitation helps to define the application of the doctrine of equivalents in cases involving paragraph 6 of 35 U.S.C. § 112 (2006). *See* Al-Site Corp. v. VSI Int'l, Inc., 174 F.3d 1308, 1319, 1323 (Fed. Cir. 1999).

76. With regard to the study reported here these dates have general, but not specific, significance. Using these dates provided for a large set of data records, helpful in painting an accurate picture of Federal Circuit jurisprudence. Because they do not generate an opinion, Rule 36 dispositions are not included.

77. They are irrelevant to this study.

Each observable analysis deciding the doctrine of equivalents was entered as a record in the data set. Thus, if an opinion decided infringement by equivalents of three claims, using distinct analyses for each claim, each of those analyses was counted as a separate record in the data set. Also, if the court decided several patent claims from a single patent with a single equivalents analysis (e.g., a single incidence of estoppel barred resort to equivalents for more than one claim), that analysis received a single entry in the data set. However, if the court decided claims from two or more different patents with a single equivalents analysis, an analysis was credited for each patent. Multiple analyses per opinion were not uncommon. Alternative opinions (i.e., concurrences and dissents) were treated as independent opinions capable of giving rise to analyses that could — independent of those in the opinion for the court — be entered as a record. The total number of analyses in the data set is 991.

D. Measurement Criteria

Overall, the measurement criteria for the Federal Circuit's doctrine of equivalents jurisprudence encompassed a broad array of measurement variables.[78] Not all were used in this study. Variables were either machine-coded using specially developed software, or human-coded.[79]

Table 1, set forth below, describes only the measurement variables used in the study reported here.

78. The total number of fields per record is fifty.

79. Generally speaking, the machine-coded variables included basic information about a decision of the Federal Circuit, such as the title of the case, the judges assigned, the date the opinion was issued, and so forth. The database also includes various citations, an identification of the opinion below, whether the opinion was designated as published or unpublished, whether certiorari was requested, and the overall disposition of the appeal. The human-coded variables addressed a broad range of other potentially useful information, including type of analyses, posture, whether equivalents were limited, claim construction, the presence of legal doctrines specific to the doctrine of equivalents, dispositions, technological identity of the patents or claims at issue, depth of analysis, and patent numbers associated with the claims at issue.

Table 1: Measurement Variables

#	*Field ID*	*Description*	*Form*	*Coding*	*Notes*
1	Judge1	Judge assigned	Text	Machine	
2	Judge2	Judge assigned	Text	Machine	
3	Judge3	Judge assigned	Text	Machine	
4	Author	Author of court's opinion	Text	Machine	
5	Opinion_Type	Type of opinion	[Sole, Majority]	Machine	
6	Author	Author of alternative opinion	Text	Machine	*may not be present*
7	Opinion_Type	Type of opinion	[Concur, Dissent]	Machine	*may not be present*
8	Author	Author of alternative opinion	Text	Machine	*may not be present*
9	Opinion_Type	Type of opinion	[Concur, Dissent]	Machine	*may not be present*
10	Outcome 1		[Affirm, Reverse, Vacate]	Human	
11	PHE Amendment		[PHE-Amend limits DOE, PHE Amend DNL DOE, n/a]	Human	
12	PHE Argument		[PHE-Arg limits DOE, PHE Arg DNL DOE, n/a]	Human	
13	AE Rule Vitiation		[AE Rule limits DOE, AE Rule DNL DOE, n/a]	Human	
14	Prior Art Limits		[PA Limits DOE, PA DNL DOE, n/a]	Human	
15	Disclosed but Unclaimed		[DBU limits DOE, DBU DNL DOE, n/a]	Human	
16	After Arising Equiv		[AA limits DOE, AA DNL DOE, n/a]	Human	
17	FWR Used		[Yes, No]	Human	
18	ID Used		[Yes, No]	Human	
19	Outcome 2		[P wins, P wins DOE still open, P loses, P loses DOE still open, n/a]	Human	
20	112p6 Outcome		[P wins, P wins DOE still open, P loses, P loses DOE still open, n/a]	Human	
21	Opinion		[Court, Concur, Dissent]	Human	

III. RESULTS AND DISCUSSION

Analysis of the collected data is directed to assessing whether Federal Circuit decisions concerning the doctrine of equivalents provide evidence of jurisprudential diversity — here defined as noticeable heterogeneity in the course of the court's decision-making. Accordingly, the analysis addresses a foundational component of the Nard and Duffy critique. It is worth noting, however, that the analysis is incapable of assessing a number of externalities that might flow from the current institutional structure.[80] Moreover, this analysis is not directed to what might have happened if patent law had developed in a multi-circuit context for the last twenty-five years.[81]

In addition, this analysis adopts the assumption that decisional patent law substantially reflects a common law-like process.[82] In other words, this analysis assumes that when it comes to patent law, unless a case is materially identical to an existing precedent, the court's written decision-making generally reflects the determination that a set of facts adds some amount of flesh to existing precedent or calls for a new rule.[83] That this usually happens in patent law within the limits

---

80. As an example, Nard and Duffy argue that with more judges involved, the Federal Circuit would be forced to produce opinions with better-articulated rationales. *See* Nard & Duffy, *supra* note 17, at 1654. This study is not directed to determining whether the court's rationales are insufficiently articulated or whether they would be better articulated if more judges had been involved. In another example, Nard and Duffy make the more conventional argument that jurisprudential controversies are significantly less apparent when only one circuit is involved. *See id.* at 1651–53. Beyond noting the considerable number of grants of certiorari and grants of en banc hearings involving patent-related issues in the Federal Circuit era, *see* cases cited *supra* note 23, this study cannot estimate the merit of that argument, and largely assumes that interested parties, the bar, the Patent Office, lower courts, legal academics, the Federal Circuit, and/or the Supreme Court are able to pick up and exploit seams and conflicts in Federal Circuit case law.

81. The analysis cannot, for example, predict whether observers today would be happier with the development of the jurisprudence of claim construction, obviousness, and written description if they had been developed in a multi-circuit context.

82. This point is contested by Plager and Pettigrew, *supra* note 30, at 1736–38.

83. The Federal Circuit is fond of writing that appellate courts "sit to review judgments, not opinions." *See, e.g.*, Depuy Spine, Inc. v. Medtronic Sofamor Danek, Inc., 469 F.3d 1005, 1021 (Fed. Cir. 2006). One of the values reflected in that statement would seem to be a deep concern for what is the kernel of the common law process: considering whether a judgment is correct as a matter of law in connection with a set of facts. Where it is not, the law of the lower court is wrong and must be remedied by the Federal Circuit, fleshing out an existing rule, or, perhaps, creating a new one. So too, when the court finds the lower court to be correct on the law, unless the case is identical in all material respects to existing precedent, the court in writing an opinion adds some degree of flesh to existing precedent or creates a new rule.

This understanding helps to justify the exclusion of appeals disposed of under FED. CIR. R. 36 (Entry of Judgment of Affirmance Without Opinion) because it should not be used unless "an opinion would have no precedential value."

In addition, the notion that written decisions add some degree of flesh to existing precedent might be overinclusive to the extent it ignores the situation of flat-out mistake, which might be seen as different in kind. An example could be when an existing rule, such as a

prescribed by Congress in the Patent Act does little to change this general characteristic, although it presumably cabins the liberty of judges to act arbitrarily. Moreover, congressionally prescribed limits hold even less sway in connection with the body of jurisprudence studied here — that of the doctrine of equivalents — because it is for the most part non-statutory.[84]

Much of the analysis of the collected data involves three major response variables that present some of the most direct measures of the court's views on the correctness of lower court judgments. In different ways they help to present useful perspectives on diversity in Federal Circuit jurisprudence. However, the insight they provide with respect to jurisprudential diversity can vary depending on their relationship to other variables. They include the following: *Wins on Appeal*; *Dispositive Wins*; and whether the Federal Circuit *Affirmed* a trial court's decision on equivalents.

The variable *Wins on Appeal* was created by scoring the analyses for patentee success as follows: when a lower court judgment that an accused infringer did not infringe under the doctrine of equivalents was reversed or vacated by the Federal Circuit or when a finding of infringement under the doctrine of equivalents was affirmed by the court, the outcome was scored successful (given a "1"). An unsuccessful outcome (a "0") was scored where a lower court judgment that an accused infringer did not infringe under the doctrine of equivalents was affirmed, or when a finding of infringement under the doctrine of equivalents was reversed or vacated by the court.[85]

The variable *Dispositive Wins* is directed to the following problem: *Wins on Appeal* does an excellent job of assessing whether patentees received a positive or negative result at the Federal Circuit, but it is ambiguous about the quality of patentee success. In particular, do patentee wins equate to the Federal Circuit authoring analyses — and mandates — that dispositively end equivalents claims in favor of patentees, or do patentee wins equate to mandates that patentees are entitled to more process (e.g., more motions practice, or perhaps even a trial, but not a dispositive, conclusive holding of a defendant's liability)? *Dispositive Wins* collects information about the former group of decisions. Thus, a successful outcome (a "1") on this variable was scored when an infringer was deemed liable for infringement under a

---

statute of limitations, prohibits liability, but the lower court simply overlooks the rule or a relevant date.

84. The exception is the specialized case of the analysis of infringement of claims drafted in the form permitted by paragraph 6 of 35 U.S.C. § 112 (2006). But even there, much of the substantive understanding of the law of equivalents is judge-made, borrowing extensively from non-§ 112 ¶ 6 case law. *See*, *e.g.*, JANICE M. MUELLER, AN INTRODUCTION TO PATENT LAW 75–76 (2d ed. 2006).

85. This is not the same definition of a patentee win employed by John Allison and Mark Lemley. *See supra* note 48, at 964–67.

theory of the equivalents. An unsuccessful outcome (a "0") was scored in every other case. [86]

A successful outcome (a "1") for the variable *Affirmed* was scored when the Federal Circuit affirmed the lower tribunal's decision, and was scored unsuccessful (a "0") in every other case.

Before proceeding to the analysis a caveat is warranted. The study presented here is directed to the modest — but difficult enough — task of collecting evidence that supports or refutes the empirical supposition that diversity is lacking in patent jurisprudence. The caveat is that the discussion accompanying the results is limited to analyzing the results in connection with this purpose. The main reason for this is to avoid confusion and to maintain a clear handle on an already difficult task. This is true even though the path of the evidence will lead some readers — as it does the author — to broader but less-related thoughts about the nature and content of Federal Circuit jurisprudence. By way of example, Table 9 shows that authorship by judges with pre-appointment patent backgrounds positively predicts *Wins on Appeal* in analyses considering a wide range of doctrines. The study does not intend to explore what substantive reasons might explain this writing pattern (Are these judges more confident in their judgment on this issue? Do their colleagues look to them when a trial judgment is going to be upset or when a controversial holding is going to be announced?). To be clear, these kinds of questions receive essentially no attention; instead, the study endeavors to remain focused on a narrower question, the use of results as evidence *vel non* of jurisprudential diversity.

Analysis of the collected data proceeds in the form of three basic inquiries. The first examines the behavior of the three major response variables over a fifteen-year period spanning 1992–2007, providing an overall measurement of the total content of the data set. The second inquiry examines the behavior of judges and groups of judges for diversity in decision-making. It argues that diversity exists in Federal Circuit decision-making by providing evidence that opinion content is judge dependent. Differences are apparent between judges active at different times, between those who are contemporaries, and between those who have been identified in other studies of the Federal Circuit as having distinct methodological characteristics. The inquiry into judges also reveals that the judges of the Federal Circuit author alternative opinions at a noticeable rate across several areas of the patent law. The third inquiry seeks to provide a more detailed descriptive account of jurisprudential diversity at the Federal Circuit by examining doctrinal trends. It argues that diversity is apparent in trends in the court's use of doctrinal components. This Part also provides evidence

86. This also differs from the definition of a patentee win employed by John Allison and Mark Lemley. *See supra* note 48, at 964–67.

of significant differences in outcomes for the major response variables that depend on the court's consideration of various aspects of the doctrine. It concludes with evidence suggesting the interpretation that different doctrines lead to significantly different outcomes in the hands of different judges.

A. Major Response Variables

One of the simplest ways to get a general perspective on diversity in Federal Circuit jurisprudence is to look at differences in the major response variables over time. As described in more detail below, intravariable differences provide evidence of the rate and direction of change of appellate opinion content, while intervariable trends provide evidence that the Federal Circuit seems to be encouraging more legal development in its cases than it has in the past. Figure 1 shows the average rate of the three major response variables over the last fifteen years, using moving (lagged) averages.

Figure 1: Trends in Rates of Major Response Variables[87]

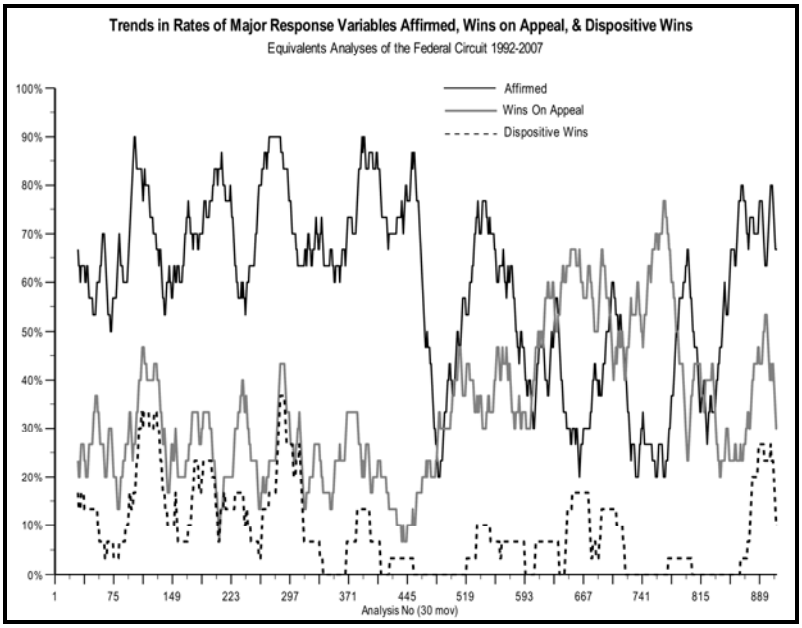

Figure 1 suggests that an attorney looking back over the last fifteen years of written Federal Circuit equivalents analyses would see a fairly diverse landscape of opinion content with respect to the average rates of success for response variables. Overall, the average rate of *Affirmed* ranges from approximately 20% to 90%, while the average rate of *Wins on Appeal* ranges from roughly 6% to 75%. The average rate of *Dispositive Wins* is somewhat less but still ranges from 0% to roughly 36%. Notably, not only are the ranges of the average rates of success for these major response variables apparently broad, but the averages are noticeably noisy in that they move up and down constantly over time.

Another perspective on diversity is also apparent in the inspection of the average rates of success for the response variables. Over roughly the first half of the data set, the overall average rate of affir-

87. The ordinate represents a 30-analysis lagged average of the percentage of successful outcomes in opinions for the court for the three major response variables plotted against the number of analyses (n=911). On the abscissa, the analysis number moves from left to right (1992–2007). A moving (and, in this case, lagged) average is useful because the court does not issue opinions on a regular and predictable schedule relative to the calendar. The lagged average looks backwards at jurisprudence for a specified number of records (in this case, 30), providing a means of assessing the recent-average frequency of any given content at any given point in the data set. Since opinions issue over time, the lagged average still reflects changes over time, approximating what a lawyer might see if he or she were to sample the most recent 20–25 opinions for the court at any given point in time.

mances is 71%, while in roughly the second half the overall average drops to 49% (compare Analysis Nos. 1–445, spanning 1992–2000, to Analysis Nos. 445–911, spanning 2001–2007). This drop is accompanied by a visually apparent increase in volatility that is also reflected in how well least squared linear trends can be made to fit the data.[88] A somewhat similar picture emerges with respect to *Wins on Appeal*. There, the first part of the data set reflects a relatively low overall rate of *Wins on Appeal* (25%), which jumps in the second half of the data set to 43%. Volatility in the average rates of successful outcomes for this variable appears to increase in the second part of the data set.[89]

Table 2: Trends in Rates of Response Variables from 1992–2007[90]

	n	r^2	*r*	*t-obs*	*p-slope*
Wins On Appeal	882	.274	.523	18.217	.000
Dispositive Wns	882	.139	-.386	-12.411	.000
Affirmed	882	.230	-.480	-16.231	.000

Table 2 provides evidence of marked differences in the direction of the linear relationships between rate of *Wins on Appeal* and Analysis Number (upward moving trend), and rate of *Affirmed* and Analysis Number (downward moving trend). It also shows a contemporaneous downward moving trend in rates of *Dispositive Wins*. This presents the interesting result that while patentees have become more successful on the doctrine of equivalents at the Federal Circuit, that success does not seem to translate into mandates conferring liability on accused infringers. Perhaps the best interpretation of this result is that a substantial amount of the patentee success reflected in *Wins on Appeal* is not finally dispositive of an equivalents issue. This suggests

88. The r^2 value for *Affirmed* — a measure of how well the least squares trend line fits the data — decreases between periods from r^2=.126 for (roughly) the first half of the data (Analysis Nos. 1–445) to r^2=.000 for again (roughly) the second half (Analysis Nos. 445–911).

89. The r^2 value for *Wins on Appeal* decreases between periods from r^2=.138 for (roughly) the first half of the data (Analysis Nos. 1–445) to r^2=.056 for again (roughly) the second half (Analysis Nos. 445–911).

90. Table 2 summarizes the results of linear regression analyses of the average rates of successful outcomes for the response variables. The linear regressions were performed with Microsoft Excel. r^2 measures variance explained; *r* is the coefficient of correlation (generally speaking, *r* values of .1, .3, and .5 are considered modest, medium, and large, respectively); *t-obs* is the t-statistic for the slope of the trend; and *p-slope* reports the statistical significance of the slope (in other words the *p-value* for the slope). Here, the *p-slope* values are statistically significant — evidence that the slope of the least squares trendlines for the data depicted in Figure 1 is different from zero for reasons other than chance.

that the court is ordering lower courts to further develop the law in these cases.

Assuming judicial competence has remained the same over the period studied, these results suggest the interpretation that the law involved is fairly dynamic. The Federal Circuit is often writing opinions that send cases back to lower courts for further development, and the trend is a rise in the court's propensity to do just that. Moreover, the court's more recent analyses show the lowest rates of *Affirmed*, implying that lower courts seem to be getting patent law wrong in the eyes of the Federal Circuit more often now than in the past.

All in all, the results in this Part tend to be more suggestive of a jurisprudence that is becoming more uncertain and unpredictable than uniform. As the next Section shows, one explanation for the differences of opinion between trial judges and Federal Circuit panels may be noticeable heterogeneity in the views of Federal Circuit judges. A second explanation, set forth in Part III.C, emphasizes diversity through doctrinal developments and the diverse impact of such developments in the hands of the court and in the hands of individual judges.

B. Judges

An important driver of jurisprudential diversity could be differing views on the part of judges as to the correct content of the law. Some judges may favor a jurisprudence that strikes a balance more or less favorable to patentees than his or her colleagues.[91] If a judge has different enough views, those differences may be detectable in the decisions of the cases that the judge hears.

Cases at the Federal Circuit are randomly assigned to judges. One can therefore postulate that panels of Federal Circuit judges receive not only a random distribution of lower court judgments, but also a random distribution of lower court judgments worthy of being added to the written body of law. One can then hypothesize that if the patent law is uniform, the court's writings would randomly distribute successful outcomes for the major response variables across all panels. In other words, there should be no differences that depend on the judges of the court.

The perspective of judge-dependent differences in outcomes might reflect different aspects of jurisprudential diversity depending on what question is asked of the data. Looking at the entirety of the

91. The characterization of "favorable to patentees" is not meant to engender notions of judges being especially patent-friendly (e.g., favoring validity, infringement, or anything else of that nature). A judge might appear to be more "favorable to patentees" when compared to another judge for reasons characterized entirely by notions of fair process or by the proper implementation of universally agreed-upon policies, and not at all by an extreme or unreasonable affection for patents.

data set, some results might be better characterized as reflecting jurisprudential diversity in a temporal sense. Not all of the judges were active at the same time. In other cases, judges might have overlapped in their tenure at the court, but one might have been in senior status for much of the overlapping period and consequently produced many fewer writings. For example, based on the analysis of the major response variables described in Part III.A, the court as a whole had higher average rates of *Affirmed* and *Dispositive Wins* and lower average rates of *Wins on Appeal* in the early part of the data set. Thus, one might expect to see diversity between older and newer judges with respect to how they predict successful outcomes for these variables, reflecting temporal diversity in the substantive and/or procedural outlooks of judges.

Contemporaneous jurisprudential diversity can also be examined. The data can be queried for information concerning differences between judges appointed at the same time, or those active and non-senior during a finite period. Each group can be postulated to have been randomly assigned cases from the same population. In addition, the data can be queried for information concerning differences between judges that are known to have substantive doctrinal differences or that might be expected to have ideological or experience-level differences.

The remainder of this Section examines all of these categories. It begins with an overall assessment of the judges working between 1992–2007, then moves to an assessment of contemporary judges, and finishes with an assessment of judges that differ in doctrinal approach, appointing president, and pre-appointment patent law experience.

1. Judges Overall

The hypothesis that between 1992 and 2007 there are no judge-dependent differences was tested using several omnibus-style chi-square tests. Specifically, twenty-one judges[92] were examined to determine whether response variable outcomes depend on panel membership. The following null hypotheses were tested:

> **Hypothesis 1**: There are no differences in the likelihood of *Wins on Appeal* when different judges hear appeals. Rejected, $\chi^2(20)=47.156$, $p=.001$.

92. The twenty-one included judges are those listed in Table 3. The analyses included are from opinions of the court ($n=911$). Every judge included in Table 3 participated in at least thirty analyses except for Nies ($n=29$), Smith ($n=27$), Cowen ($n=15$), and Bennett ($n=8$).

> **Hypothesis 2**: There are no differences in the likelihood of *Dispositive Wins* when different judges hear appeals. Rejected, $\chi^2(20)=70.881$, $p=.000$.
>
> **Hypothesis 3**: There are no differences in the likelihood of *Affirmed* when different judges hear appeals. Rejected, $\chi^2(20)=58.990$, $p=.000$.

As the statements of rejection at the end of each hypothesis indicate, each of these null hypotheses is rejected with a strong level of statistical significance. Accordingly, these tests provide evidence of diversity among Federal Circuit judges over the last fifteen years. Participation by different judges produces analyses containing significantly different outcomes for the response variables.

To examine some of these characteristics in more detail, Table 3 shows information derived from logistic regression models for the Federal Circuit judges as panel participants. The numbers reported in Table 3 are Exp(B) values. These are odds ratios and represent the change in odds of a successful outcome (i.e., a "1" as discussed above) for each of the major response variables given the participation of the named judge. Values greater than one indicate that a particular judge's participation predicts an increase in the odds of a successful outcome. Values lower than one indicate that panel participation by the named judge predicts a decrease in the odds of a successful outcome.

Table 3: Logistic Regression Models for Federal Circuit Judges as Participants[93]

	Response Variable		
Explanatory Variable	Wins on Appeal	Dispositive Wins	Affirmed
Archer	1.417	2.393**	.746
Bennett	1.951	(no wins)	.407
Bryson	.830	.876	1.530*
Clevenger	.823	.308**	.950
Cowen	.701	1.591	1.026
Dyk	1.050	.189*	.746
Friedman	.765	(no wins)	1.085
Gajarsa	1.254	.770	.802
Linn	1.196	.157*	.633*
Lourie	.548***	.572†	1.278
Mayer	1.087	1.184	.905
Michel	.886	0.860	1.009
Newman	1.147	1.856**	.907
Nies	.826	1.606	1.918
Plager	.881	.673	.915
Prost	1.759*	.662	.623*
Rader	1.542**	2.413***	1.128
Rich	.618†	2.919***	2.073**
Schall	1.408*	.959	.633**
Skelton	.208**	1.144	10.043**
Smith	.431†	1.823	3.094*

Table 3 provides an additional descriptive dimension to the diversity suggested by the hypothesis testing. As is evident, judges are diverse not only within response variables but also across response

93. Table 3 presents individual models for each judge and thus reflects how individual judges compare to the court. It gives a representation of the magnitude and direction of each judge's individual effect and whether that effect is statistically significant (different from zero for reasons other than chance). Superscripts report the relevant level of statistical significance: some judges do not significantly predict the response variables (no superscript), while others are predictors at a marginal level of significance (†), $p \leq 0.1$; at the conventional definition of significance (*), $p \leq 0.05$; at higher level of significance (**), $p \leq 0.01$; and at an even higher level of significance (***), $p \leq 0.001$.

variables. For example, distinct sets of judges significantly predict different response variables.[94]

Federal Circuit judges also show marked diversity in their effect magnitudes. Even a cursory glance at Table 3 reveals that the odds ratios vary dramatically. Within a response variable, the participation of different judges has different sized effects. For example, with respect to *Wins on Appeal*, participation by Judges Prost or Rader predicts an increase in the odds of a successful outcome.[95] Participation by Judges Mayer, Michel, or Newman has a small effect on the same response variable.[96]

Not only is the magnitude of the judges' predictive power different, so is the direction. While, as just noted, participation by Judges Prost or Rader predicts an increase in the odds of a successful outcome for *Wins on Appeal*, participation by Judge Lourie predicts a decrease in the odds of a successful outcome.[97] Similarly, while participation by Judges Archer, Newman, Rader, or Rich significantly predicts an increase in the odds of a successful outcome for *Dispositive Wins*,[98] participation by Judges Clevenger, Dyk, Linn, or Lourie predicts a decrease in the odds of successful outcome.[99]

Finally, where a judge's participation significantly predicts one response variable, the same judge's participation will not necessarily predict another with the same magnitude or in the same direction.[100] For example, participation by Judges Prost or Schall has a positive effect on the odds of *Wins on Appeal*, but has a negative effect on the odds of *Affirmed*.[101] By contrast, Judge Rader has a significantly posi-

---

94. Compare the significance across judges for the columns of response variables in Table 3, *supra* p. 447. The participation of Judges Lourie, Prost, Rader, Rich, Schall, Skelton, or Smith is a significant predictor of *Wins on Appeal*. The participation of Judges Archer, Clevenger, Dyk, Friedman, Lynn, Lourie, Newman, Rader, or Rich is a significant predictor of *Dispositive Wins*. Lastly, the participation of Judges Bryson, Linn, Prost, Rich, Schall, Skelton, or Smith is a significant predictor of *Affirmed*.

95. *See* Table 3, *supra* p. 447 (compare 1.759* (Prost) and 1.542** (Rader)).

96. *See* Table 3, *supra* p. 447 (compare 1.087 (Mayer), 0.886 (Michel), and 1.147 (Newman)).

97. *See* Table 3, *supra* p. 447 (0.548***).

98. *See* Table 3, *supra* p. 447 (compare 2.393** (Archer), 1.856** (Newman), 2.413*** (Rader), 2.919*** (Rich)).

99. *See* Table 3, *supra* p. 447 (compare 0.308** (Clevenger), 0.189* (Dyk), 0.157* (Linn), 0.572† (Lourie)).

100. Compare the differences in significance for a single judge across the rows of Table 3. For example, participation by Judge Lourie significantly predicts *Wins on Appeal* (0.548***) and *Dispositive Wins* (0.572†), although not to the same level of significance for each variable, but does not significantly predict *Affirmed* (1.278). Participation by Judge Bryson, on the other hand, does not predict *Wins on Appeal* (0.830) or *Dispositive Wins* (0.876) but predicts *Affirmed* (1.530*), while participation by Judge Newman predicts *Dispositive Wins* (1.856**), but not the other variables (1.147 for *Wins on Appeal*, 0.907 for *Affirmed*).

101. *See* Table 3, *supra* p. 447 (compare 1.759* with 0.623* (Prost, *Wins on Appeal* and *Affirmed*, respectively), and 1.408* with 0.633** (Schall, *Wins on Appeal* and *Affirmed*, respectively)).

tive effect on the odds of *Wins on Appeal*, but a slightly positive effect on *Affirmed*.[102] In another example, the participation by Judge Lourie has a negative effect on the odds of *Dispositive Wins*, and a slight positive effect on *Affirmed*,[103] while participation by Judge Linn has a strong negative effect on *Dispositive Wins*[104] and a negative effect on the odds of *Affirmed*.

2. Contemporary Judges

Table 3 provides a description of differences between contemporary judges, but because it commingles judges active at different times in the history of the Federal Circuit it provides only modest statistical evidence in support of the idea that response variable outcomes depend on judges active at the same time. This Section more directly examines contemporary judges. It first examines judges who are contemporaries because they were appointed at roughly the same time. Then it moves to examine judges who are contemporaries in the sense that they were the 10 most active authors of Federal Circuit analyses between January 1, 2001 and December 31, 2005.

Within Table 3, consider the following five judges: Rader (appointed in 1990), Lourie (appointed in 1990), Clevenger (appointed in 1990), Schall (appointed in 1992), and Bryson (appointed in 1994).[105] In this Section, the Article treats them as contemporaries because they were all appointed either before the period measured by this data set, or very early in the period. Moreover, they were all quite active during the period studied, with Judge Clevenger taking senior status only very near the end. Note that there are descriptive differences between these judges apparent in Table 3. Judges Bryson and Clevenger do not significantly predict a change in the odds of *Wins on Appeal*; Judge Lourie predicts a strongly significant decrease in the odds; and Judges Rader and Schall predict a significant increase in the odds.[106]

---

102. *See* Table 3, *supra* p. 447 (compare 1.542** (*Wins on Appeal*) with 1.128 (*Affirmed*)).

103. *See* Table 3, *supra* p. 447 (compare 0.572† (*Dispositive Wins*) with 1.278 (*Affirmed*)).

104. *See* Table 3, *supra* p. 447 (compare 0.633* (*Affirmed*) with 0.157* (*Dispositive Wins*)).

105. *See* Federal Circuit | Judicial Biographies, http://www.cafc.uscourts.gov/judgbios.html (last visited May 15, 2009).

106. *See* Table 3, *supra* p. 447. One can see some evidence of diversity between these judges by considering them across the response variables as well. For example, the participation of Judges Rader and Schall, both of which predict an increase in the odds of *Wins on Appeal* (1.542** and 1.408*, respectively), differ from one another in connection with *Dispositive Wins* (2.413*** and 0.959, respectively). Judge Rader's participation predicts an increase in the odds of a successful outcome, while that of Judge Schall has no appreciable predictive effect. This relationship flips when one considers *Affirmed* — Judge Rader's participation has no appreciable predictive effect, while that of Judge Schall significantly predicts a decrease in the odds of a successful outcome (1.128 and 0.633**, respectively).

To see if response variables outcomes are independent within this set of contemporary judges, the following three hypotheses were tested:[107]

> **Hypothesis 1**: There are no differences in the likelihood of *Wins on Appeal* when Judges Rader, Lourie, Clevenger, Schall, and Bryson hear appeals. Rejected, $\chi^2(4)=20.261$, $p=.000$.
>
> **Hypothesis 2**: There are no differences in the likelihood of *Dispositive Wins* when Judges Rader, Lourie, Clevenger, Schall, and Bryson hear appeals. Rejected, $\chi^2(4)=21.395$, $p=.000$.
>
> **Hypothesis 3**: There are no differences in the likelihood of *Affirmed* when Judges Rader, Lourie, Clevenger, Schall, and Bryson hear appeals. Rejected, $\chi^2(4)=13.588$, $p=.008$.

The rejection of these hypotheses provides evidence that participation by these judges leads to different outcomes for the response variables.

Another set of contemporary judges was defined by the ten most active judicial authors from January 1, 2001 to December 31, 2005. They include Judges: Bryson, Clevenger, Gajarsa, Linn, Lourie, Michel, Newman, Rader, Schall, and Dyk.[108] To see if response variable outcomes depend on authorship of analyses by these ten judges, the following hypotheses were tested:

> **Hypothesis 1**: There are no differences in the likelihood of *Wins on Appeal* when Judges Bryson, Clevenger, Gajarsa, Linn, Lourie, Michel, Newman, Rader, Schall, and Dyk author analyses between January 1, 2001 and December 31, 2005. Rejected, $\chi^2(9)=17.604$, $p=.040$.
>
> **Hypothesis 2**: There are no differences in the likelihood of *Dispositive Wins* when Judges Bryson, Clevenger, Gajarsa, Linn, Lourie, Michel, Newman, Rader, Schall, and Dyk author analyses between

107. The analyses are opinions for the court. The judge variables count panel participation. Each included judge participated in over 150 analyses.

108. These judges were examined in connection with their authorship of analyses, including dissents and concurrences.

> January 1, 2001 and December 31, 2005. Rejected, $\chi^2(9)=30.830$, $p=.000$.[109]
>
> **Hypothesis 3**: There are no differences in the likelihood of *Affirmed* when Judges Bryson, Clevenger, Gajarsa, Linn, Lourie, Michel, Newman, Rader, Schall, and Dyk author analyses between January 1, 2001 and December 31, 2005. Rejected, $\chi^2(9)=18.314$, $p=.032$.

Taken in light of the results presented in the previous sections, these results add to the description of diversity in Federal Circuit jurisprudence. The evidence they provide supports the interpretation that inter-judge diversity is not just a function of when a judge is active; different judges active at the same time have and express diverse views about the merits of patent cases.

3. Factions and Groups

Judges that showed positive or negative effects on the major response variables could be grouped. Examining the performance of those groups could be used to demonstrate diversity along yet another set of variables, but that approach would overlap to some degree the results already presented. Therefore, instead of cherry-picking groups clearly identifiable from this data set, this Section utilizes groups of judges predefined by other means. The defining characteristics of these groups of judges vary broadly from methodological orientation to identity of appointing president to pre-appointment patent law experience. Table 4 identifies the specific categorizations of Federal Circuit judges.

Perhaps the most well studied factions at the Federal Circuit are those identified due to the fact that they associate with substantive differences in methodological approach to the important patent law issue of claim construction.[110] One set of judges, known as the *proceduralists*, have emphasized a process-oriented approach to the analysis of the meaning of patent claims, while the other set, known as the *holistics*, have emphasized what is in essence an opposite approach: an open ended interpretation of the patent more generally featuring a

---

109. Due to the relatively small number of *Dispostive Wins* in this period, some of the cells in the Table underlying this test had an expected value of less than 5. This suggests the results of the test should be interpreted with caution. The minimum expected value for any cell in the table was 1.63.

110. *See* Wagner & Petherbridge, *supra* note 39 (identifying these groups); *see also* Nard & Duffy, *supra* note 17, at 1656–57; Plager & Pettigrew, *supra* note 30, at 1745. It is worth pointing out that the presence of these distinct methodological groups in and of itself presents strong evidence of inter-judge diversity at the Federal Circuit.

varying and unpredictable emphasis on one or another form of interpretive aid depending on the moment.[111] A third set of judges — known as swing judges — have been identified as not particularly strong adherents to any of the two competing forms of methodology.[112]

Some believe that a president's policy preferences can be reflected in the identity of judicial appointments. To examine whether Federal Circuit judges behaved differently based on the identity of their appointing president, groups of judges were differentiated along the lines of their appointment by Presidents Clinton, George H.W. Bush, and Reagan.

Finally, a number of Federal Circuit judges have substantial pre-appointment practice experience in patent law, while others do not.[113] This reflects the third group of judges.

Table 4: Judicial Groupings Used in the Study[114]

Proceduralists[115]	Linn, Dyk, Clevenger
Swings	Rader, Michel, Mayer, Gajarsa, Archer, Plager, Schall, Rich
Holistics	Bryson, Newman, Lourie
Clinton[116]	Bryson, Dyk, Gajarsa, Linn
George H.W. Bush	Clevenger, Lourie, Plager, Rader, Schall
Reagan	Archer, Mayer, Michel, Newman
Patent Bkgrd[117]	Dyk, Gajarsa, Linn, Lourie, Newman, Rader, Rich
No Patent Bkgrd	Archer, Bennett†, Bryson, Clevenger, Cowen†, Friedman†, Mayer, Michel, Nies, Plager, Prost, Schall, Skelton†, Smith†

111. Wagner & Petherbridge, *supra* note 39, at 1111 n.19; R. Polk Wagner & Lee Petherbridge, Did *Phillips* Change Anything? Empirical Analysis of the Federal Circuit's Claim Construction Jurisprudence 7 (Apr. 3, 2008) [hereinafter Wagner & Petherbridge, *Phillips*] (unpublished manuscript, on file with the *Harvard Journal of Law & Technology*) (providing additional description of the groups).

112. Wagner & Petherbridge, *supra* note 39, at 1112, 1160.

113. *See* Kimberly A. Moore, *Are District Court Judges Equipped to Resolve Patent Cases?*, 15 HARV. J.L. & TECH. 1, 26 n.97 (2001) (listing judges with patent backgrounds prior to appointment and describing their patent backgrounds).

114. † indicates judges who were included when participation was examined, but not included when authorship was examined, as in Table 6, *infra* p. 456.

115. Wagner & Petherbridge, *supra* note 39, at 1160.

116. *See* Federal Circuit | Judicial Biographies, *supra* note 105.

117. *See* Moore, *supra* note 113, at 26 n.97; *see also* Federal Circuit | Judicial Biographies, *supra* note 105.

As before, the statistical arguments used are chi-square and logistic regression. Diversity was first analyzed by examining whether there are differences in successful outcomes for the major response variables based on panel participation by a group member. In omnibus fashion[118] the following nine hypotheses were tested.

> **Hypothesis 1**: There are no differences in the likelihood of *Wins on Appeal* when judges with different methodological orientation hear appeals. Rejected, $\chi^2(2)=6.255$, $p<.044$.
>
> **Hypothesis 2**: There are no differences in the likelihood of *Dispositive Wins* when judges with different methodological orientation hear appeals. Rejected, $\chi^2(2)=25.839$, $p<.000$.
>
> **Hypothesis 3**: There are no differences in the likelihood of *Affirmed* when judges with different methodological orientation hear appeals. Rejected, $\chi^2(2)=7.141$, $p=.028$.
>
> **Hypothesis 4**: There are no differences in the likelihood of *Wins on Appeal* when judges appointed by different presidents hear appeals. Failed to Reject, $\chi^2(2)=0.447$, $p=.800$.
>
> **Hypothesis 5**: There are no differences in the likelihood of *Dispositive Wins* when judges appointed by different presidents hear appeals. Rejected, $\chi^2(2)=13.77$, $p=.001$.
>
> **Hypothesis 6**: There are no differences in the likelihood of *Affirmed* when judges appointed by different presidents hear appeals. Failed to Reject, $\chi^2(2)=0.199$, $p=.906$.
>
> **Hypothesis 7**: There are no differences in the likelihood of *Wins on Appeal* when judges with and without patent backgrounds hear appeals. Failed to Reject, $\chi^2(1)=0.116$, $p=.734$.

118. The analyses included are those from opinions for the court. Every group included in Table 4 participated in over 350 analyses.

> **Hypothesis 8**: There are no differences in the likelihood of *Dispositive Wins* when judges with and without patent backgrounds hear appeals. Failed to Reject, $\chi^2(1)=1.993$, $p=.158$.
>
> **Hypothesis 9**: There are no differences in the likelihood of *Affirmed* when judges with and without patent backgrounds hear appeals. Failed to Reject, $\chi^2(1)=0.006$, $p=.937$.

As is evident from the statements of rejection, several of these hypotheses can be rejected and several cannot. Overall, this is further evidence of diversity at the court on the response variables. There are very significant differences across all of the major response variables between the groups of judges that use different methodological approaches to claim construction. In addition, there are significant differences between the groups of judges based on appointing president in *Dispositive Wins*, but no evidence of significant differences in *Wins on Appeal* or *Affirmed*. Chi-square testing produces no evidence of differences between judges based on whether they have a patent background.[119]

Table 5 examines inter-judge differences using logistic regression models for groups of Federal Circuit judges as panel participants. Like Table 3, it helps to describe the diversity reflected by these groups of judges. It shows that different groups of judges differ distinctly from one another in the significance of their relationships to the response variables[120] and in the magnitude of their predictive power.[121] Moreover, judge groups are diverse not only within response variables,[122] but also across response variables.[123]

---

119. *Cf.* John R. Allison & Mark A. Lemley, *How Federal Circuit Judges Vote in Patent Validity Cases*, 27 FLA. ST. U. L. REV. 745 (2000) (observing little difference in the effect of patent background outside of an increase in frequency of authorship).

120. For example, compare the significance of the effects of the judge groups within a response variable in Table 5, *infra* p. 455.

121. For example, compare the odds ratios of the judge groups within a response variable in Table 5, *infra* p. 455.

122. For example, participation of swing judges predicts an increase in the odds of a successful outcome for *Wins on Appeal*, participation of holistic judges predicts a decrease in the odds of a successful outcome, and participation of proceduralists has no significant predictive effect. In another example, participation of judges appointed by President Reagan predicts an increase in the odds of a successful outcome on *Dispositive Wins*, while participation of judges appointed by either President George H.W. Bush or President Clinton predict a decrease in *Dispositive Wins*.

123. For example, compare the odds ratios for different judge groups across the response variables.

Table 5: Logistic Regression Models for Groups of Federal Circuit Judges as Participants[124]

	Response Variable		
Explanatory Variable	Wins on Appeal	Dispositive Wins	Affirmed
Proceduralists	.881	.183***	.736*
Swings	2.267**	1.554	.655†
Holistics	.670**	.809	1.460**
Clinton	1.056	.396***	.846
George H.W. Bush	.805	.543*	1.030
Reagan	1.019	2.348**	1.001
Patent Bkgrd	.799	.765	.998
No Patent Bkgrd	.819	1.393	1.399

4. Disputes Among Federal Circuit Judges

Another measure of diversity is whether judges apply doctrine in a way that goes unchallenged by their colleagues. If early in its history the Federal Circuit issued a relatively small number of precedential opinions that broadly foreclosed debate and competition in views, then one might expect to see little indication in the court's writings of competing views. Thus, the presence of alternative writings, including both concurrences and dissents, can be additional evidence of a diverse jurisprudence. Table 6 shows the rate of alternative writings at the Federal Circuit across several major issues. Table 6 reports three different *Analysis Types*. *Equivalents* reports the rate of alternative writings from this study. The rates for *Claim Construction* and *Obviousness* are collected from other studies providing a degree of meta-perspective on the frequency with which the court produces alternative writings.

124. As before, the numbers reported in Table 5 are Exp(B) values. These are odds ratios and represent the change in odds of a successful outcome for each of the major response variables given the participation of a group member on a panel. Values greater than one predict an increase in the odds of a successful outcome; values lower than one predict a decrease. Significance is as follows: †≤0.1, *≤0.05, **≤0.01, ***≤0.001. Table 5 presents individual models for each judge group. It thus reflects how individual judge groups compare to the court, giving a representation of the magnitude and direction of their effect, and whether their effects are significant (different from zero for reasons other than chance).

Table 6: Rates of Alternative Writings at the Federal Circuit[125]

Analysis Type	*Alt Rate*
Equivalents *Jan. 1, 1992 to May 2, 2007 (n=991)*	8.1%
Claim Construction *May 15, 1996 to Apr. 15, 2007 (n=785)*	9.5%
Obviousness *Jan. 1, 1990 to Jun. 1, 2005 (n=480)*	18.3%
Obviousness Non-PTO *(n=282)*	19.5%
Obviousness PTO *(n=198)*	14.6%

As is evident, the rate of alternative writings[126] is substantial. This is yet further evidence that competing views exist at the Federal Circuit and make their way into the court's writings. It is also interesting to note that the rate of alternative writings is lower with respect to *Equivalents* than it is for the major patent doctrines *Claim Construction* and *Obviousness*. This is so even though the doctrine of equivalents is reputed to be a very contentious doctrine.[127] One possible reason for this result may stem from the observation that the doctrine of equivalents has been the subject of greater Supreme Court in-

125. Table 6 includes results from this study and other studies to provide more of a picture of alternative writing at the court. The data for Claim Construction is reported in Wagner & Petherbridge, *Phillips*, *supra* note 111, at 13, 24 (examining among other things, the rate of alternative opinions). The obviousness data comes from the recoding of data used in a study reported at Petherbridge & Wagner, *supra* note 48 (reporting obviousness data and showing in a detailed study that the Federal Circuit's teaching, suggestion, or motivation test for combining references did not have a significant effect on the results of obviousness cases at the Federal Circuit).

126. For those interested in dissents only, see Christian A. Chu, *Empirical Analysis of the Federal Circuit's Claim Construction Trends*, 16 BERKELEY TECH. L.J. 1075, 1108, 1117 (2001) (reporting a 7% rate of dissent per case across all patent cases for a 28-month period); Jeffrey A. Lefstin, *The Measure of the Doubt: Dissent, Indeterminancy, and Interpretation at the Federal Circuit*, 58 HASTINGS L.J. 1025, 1072 (2007) (reporting dissent frequencies ranging from 7.5% to 9.2% at the Federal Circuit between 1998 and 2005 for a number of patent issues); Paul R. Michel, *The Court of Appeals for the Federal Circuit Must Evolve to Meet the Challenges Ahead*, 48 AM. U. L. REV. 1177, 1191 (1999) (claiming a rate of dissent less than 10% as measured by cases).

127. *See, e.g.*, Litton Sys., Inc. v. Honeywell, Inc., 145 F.3d 1472, 1472 (Fed. Cir. 1998) (Plager, J., dissenting) (noting that "there is perhaps no question more important to the health of patents than . . . the judicially-created doctrine of equivalents" and that "a candid appraisal of our jurisprudence in this area suggests that there is room for improvement"); Meurer & Nard, *supra* note 55, at 1948 ("Perhaps no doctrine in patent law is as controversial as the Doctrine of Equivalents . . . ." (footnote omitted)).

volvement than the other two doctrinal areas,[128] making possible the idea that the Supreme Court's involvement with the doctrine of equivalents has had some degree of unifying effect.

Also interesting, perhaps, is that approximately a year after the date of the end of the period studied for *Obviousness* — which has the highest rate of alternative writings in Table 6 — the Supreme Court granted certiorari to address the issue.[129] This may suggest sensitivity at the Court to diverging views of patent law reflecting, perhaps, in Federal Circuit jurisprudence.[130]

C. Additional Evidence of Diversity in the Development and Application of Jurisprudential Content

The results presented above show remarkable diversity in the trends and average rates of successful outcomes for the response variables over the last fifteen years. They also reveal diversity in the form of statistically significant differences in the likelihood, strength, and direction of outcome preferences across all of the response variables for individual judges and for groups of judges. Together, these results suggest the interpretation that over the last fifteen years different Federal Circuit judges and groups of judges have had significantly different views about the content of the jurisprudence. Thus, these results provide evidence that weighs against a claim that the Federal Circuit's jurisprudence is unitary and irretrievably entrenched. It does not appear, at least, that in the years following 1982, the Federal Circuit authored a relatively small number of opinions that by path-dependency have foreclosed debate, competition in views, and doctrinal refinement through a common law process.

This Section complements the data already presented but is different in kind. Rather than looking only at how judges and groups of judges relate to the major response variables, this Section attempts to

---

128. Since the creation of the Federal Circuit, the Supreme Court has granted certiorari on the doctrine of equivalents twice. *See* Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 535 U.S. 722 (2002); Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 520 U.S. 17 (1997). It has granted certiorari on claim construction once, *see* Markman v. Westview Instruments, Inc., 517 U.S. 370 (1996), and on obviousness once, *see* KSR Int'l Co. v. Teleflex, Inc., 127 S. Ct. 1727 (2007). It is worth noting that the *KSR* grant and opinion were very recent — and in fact the opinion came after the period studied in Petherbridge & Wagner, *supra* note 48 — so the impact of the *KSR* case on the rate of alternative writings at the Federal Circuit should be slight at most.

129. *Compare* Petherbridge & Wagner, *supra* note 48, at 2071 (reporting that the period studied for obviousness spanned January 1, 1990 to June 1, 2005), *with* KSR Int'l Co. v. Teleflex, Inc., 126 S. Ct. 2965 (2006) (granting certiorari June 26, 2006).

130. This is not the same thing as saying that the Supreme Court necessarily considers alternative writings in deciding to grant certiorari. Whether it does or not, higher frequencies of alternative writings could reflect inputs from a complex array of institutional and noninstitutional voices that eventually create the environmental conditions needed for the Supreme Court to grant certiorari.

provide an even more detailed descriptive account of jurisprudential distinctions at the Federal Circuit.

The analysis proceeds by first examining trends in appearance of doctrinal components of the doctrine of equivalents. The doctrinal components were introduced in Part II.B as equivalents-specific doctrines, and moving forward, this analysis will discuss them using that label. An examination of trends in their appearance in Federal Circuit case law provides something of a picture of diversity *vel non* in the development of the law of the doctrine of equivalents. The analysis then moves to examine the relationship between some of the doctrinal components of the doctrine of equivalents and the major response variables. Focusing on the court only, this allows for the exploration of whether equivalents jurisprudence is diverse in the sense that different aspects of it give rise to different outcomes. Finally, the analysis considers the use of the doctrinal components in the hands of authoring judges. This allows for the exploration of whether equivalents jurisprudence is diverse in the sense that different aspects of it give rise to different outcomes in the hands of different judges. As described in more detail below, the results of this Section, like those presented earlier, favor the interpretation that Federal Circuit written pronouncements, and by extension Federal Circuit jurisprudence, contain diversity.

Table 7 begins the analysis, summarizing the linear trends in the rates at which the Federal Circuit discusses equivalents-specific doctrines. The first two variables — *Legal Limits* and *Infringement Standards* — are variables created by grouping various equivalents-specific doctrines described in Part II.B. *Legal Limits* refers to doctrines that impose legal limits on the range of equivalents a patentee may assert. The doctrines in this group are questions of law to be decided by a judge.[131] *Infringement Standards* refers to the standards that govern the factual comparison between a defined range of equivalents and an accused device or process.[132] As long as there exists a genuine issue of material fact, the application of these standards is entrusted to a fact finder with the usual possibilities for judicial override.

131. They include: Amendment Estoppel, Argument Estoppel, All Elements, Prior Art Limits, Disclosed But Unclaimed subject matter limitations, and limits of equivalents in some ases to after arising technology. This last limit is used somewhat infrequently in the analyses in this data set and for that reason does not have its own separate row.

132. This variable is a grouping of successful outcomes for Function-Way-Result ("F-W-R") and Insubstantial Differences. ("ID")

Table 7: Trends in Rates of Appearance of Equivalents-Specific Doctrines from 1992–2007[133]

Variable	r^2	*r*	*t-obs*	*p-slope*	*trend direction*
Legal Limits	.000	.022	.668	.505	None
Infringement Standards	.241	.491	17.263	.000	Upward
Amendment Estoppel	.114	-.338	-11.005	.000	Downward
Argument Estoppel	.308	.555	20.473	.000	Upward
All Elements	.021	-.143	-4.44	.000	Downward
Prior Art Limits	.168	.409	13.762	.000	Upward
Disclosed But Unclaimed	.005	-.068	-2.105	.036	Downward
F-W-R	.130	.361	11.876	.000	Upward
ID	.119	.345	11.256	.000	Upward

The key point from Table 7 is that some components of the doctrine of equivalents have been on the rise over the last fifteen years while others have been on the decline. Some components, like Amendment Estoppel — a doctrine almost totally eviscerated by the Federal Circuit and the Supreme Court — are perhaps not surprisingly on the decline. But others, like Argument Estoppel, appear to be increasing in average frequency. Viewed together, the results in Table 7 suggest a somewhat dynamic jurisprudence. Different components of the jurisprudence are advancing in terms of the frequency of their discussion at the Federal Circuit, while other components are declining. The picture seems not to be that of stagnating case law. Rather, it appears to be one of a body of law that is subject to forces that push and pull it in different directions.

The relationship between components of the doctrine of equivalents and the major response variables was examined with chi-square testing and logistic regression. The basic logic is that if there is no diversity in equivalents jurisprudence, there should be no differences in outcome that depend on the Federal Circuit's discussion of the var-

133. Table 7 summarizes the results of linear regression analyses of the response variables. The linear regressions were performed with Microsoft Excel, reflecting the results for a least squares trend line of a 50-analysis moving average of all analyses in the data set. A 50-analysis average was used here because of the variations in frequency with which the court discusses the various doctrines. r^2 measures variance explained; *r* is the coefficient of correlation (generally speaking *r*-values of .1, .3, and .5 are considered modest, medium, and large, respectively); *t-obs* is the t-statistic for the slope of the trend; and *p-slope* reports the statistical significance of the slope. As noted in the text, the *Legal Limits* and *Infringement Standards* variables are defined groupings of the other variables.

ious components of the doctrine of equivalents. Thus, evidence of diversity should be apparent in the result that outcomes depend on the doctrinal components discussed by the court. The doctrinal component categories are listed in Table 7 underneath the grouped variables (underneath *Infringement Standards*). Using an omnibus approach,[134] the following three hypotheses were tested.

> **Hypothesis 1**: There are no differences in the likelihood of *Wins on Appeal* when the court considers different aspects of the doctrine of equivalents in its written opinion. Rejected, $\chi^2(6)=19.684$, $p=.003$.
>
> **Hypothesis 2**: There are no differences in the likelihood of *Dispositive Wins* when the court considers different aspects of the doctrine of equivalents in its written opinion. Rejected, $\chi^2(6)=13.557$, $p=.035$.
>
> **Hypothesis 3**: There are no differences in the likelihood of *Affirmed* when the court considers different aspects of the doctrine of equivalents in its written opinion. Rejected, $\chi^2(6)=29.523$, $p<.000$.

These results are evidence that the response variables are not independent of (or to put it more casually — depend on) the different doctrines that the court considers in its written opinions. This evidence provides further support for the interpretation that Federal Circuit jurisprudence contains diversity and broadens still further the perspectives from which that diversity can be understood.

Logistic regression models show more particularly the effect the discussion of various components of the doctrine of equivalents has on the odds of successful outcomes for the major response variables. As is evident from Table 8, the components of the doctrine of equivalents differ from one another in the significance of their relationships to the response variables,[135] and in the magnitude of their predictive power.[136] Moreover, diversity is apparent not only within response variables, but also across response variables.[137]

---

134. The court sometimes considers more than one equivalents doctrine in the same analysis. To address this fact and to present a clearer view of the effect of specific doctrines only analyses that discussed a single doctrine were included. This limits the number of analyses (in opinions for the court) to $n=439$.

135. Compare the significance of the effect of the components within a response variable (e.g., within the variable *Wins on Appeal*, compare Amendment Estoppel (2.302***) with Argument Estoppel (.972)).

136. *See supra* note 135.

137. For example, compare Amendment Estoppel across variables (2.302***, .772, and .521**); or F-W-R across variables (e.g., .583†, 1.672, and 4.422***)

Table 8: Differences in Major Response Variables in Analyses that Consider Various Equivalents Specific Doctrines[138]

	Response Variable		
Explanatory Variable	Wins on Appeal	Dispositive Wins	Affirmed
Legal Limits	1.961*	.699	.371***
Infringe Stds	.510*	1.430	2.694***
Amendment Estoppel	2.302***	.772	.521**
Argument Estoppel	.972	2.772**	.910
All Elements	.665	.305*	1.094
Prior Art	3.114*	n/a	.288*
Disclosed Unclaimed	1.133	1.668	.446
F-W-R	.583†	1.672	4.422***
ID	.463	.756	.856

Notably, an examination of the pattern of the odds of successful outcomes for *Wins on Appeal* and *Affirmed* suggests the possibility that there is considerable debate concerning the correct content and application of law. Over the last fifteen years a patentee is likely to do much better at the Federal Circuit in analyses that present questions concerning the legal scope of the doctrine of equivalents than in analyses that present questions concerning whether a alleged equivalent falls within a settled scope.[139] But that success does not translate into *Dispositive Wins*, for which neither grouping has any significant effect.[140] Rather, the success appears to translate primarily into non-affirmances,[141] suggesting that the court is finding error in lower court judgments concerning questions of law and sending cases back for more development.

138. Table 8 presents individual models for each doctrine. The response variables are limited in Table 8 to analyses in opinions for the court that expressly consider only one equivalents doctrine (*n*=439). Values greater than one indicate that when a doctrine is considered the odds of a successful outcome increase; values lower than one indicate that when a doctrine is considered the odds of a successful outcome decrease.

139. *See* Table 8, *supra* p. 461 (compare *Legal Limits* (grouping doctrines that define the legal scope of the doctrine of equivalents at 1.961*) with *Infringement Standards* (grouping doctrines at 0.510*)).

140. *See* Table 8, *supra* p. 461 (compare 0.699 with 1.430); *accord* Figure 1, *supra* p. 442; Table 2, *supra* p. 443; *see also* Allison & Lemley, *supra* note 48, at 966–70 (providing results that suggest that patentees are not often successful in establishing infringement liability on a theory of equivalents).

141. *See* Table 8, *supra* p. 461 (compare 0.371*** to 2.694***).

Table 9 examines the question of whether *Wins on Appeal* depends on the group identity of an authoring judge in subsets of analyses that consider specific doctrines. The statistical argument employed is logistic regression.[142] Table 9 shows the various subsets as columns, which include the number of analyses in each category.

Table 9: Differences in the Effect of Authorship on Wins on Appeal in Analyses That Consider Specific Doctrines[143]

Authorship
Response Variable is Patentee Wins on Appeal
Columns are Subsets of Analyses that Consider Only the Doctrines Listed

Explanatory Variable	*Legal Limits (n=362)*	*Infringe Stds (n=126)*	*Amendment Estoppel (n=118)*	*Argument Estoppel (n=81)*	*All Elements (n=136)*	*F-W-R (n=90)*
Proceduralists	.954	.402	.410	(no wins)*	3.686**	.464
Swings	1.674*	2.712*	3.107**	1.367	.617	1.312
Holistics	.559*	.876	.388†	1.677	.397†	1.474
Clinton	1.144	.993	1.089	.647	2.848*	1.089
George H.W. Bush	.831	.774	.832	.540	.632	.439
Reagan	1.953*	1.890	1.647	4.154*	1.208	2.625
Patent Bkgrd	2.198***	1.454	2.799*	1.179	3.634**	2.839†
No Patent Bkgrd	.583*	1.171	.415*	1.179	.372*	.571

Overall, Table 9 shows that there is considerable diversity in the magnitude and direction of effect on *Wins on Appeal* for the various

142. In the interests of economy, the results of chi-square are not reported, although it was performed. Across some of the subsets, there are significant differences within judge-groups.

143. The numbers reported in Table 9 are Exp(B) values — odds ratios that represent the change in odds of a successful outcome for each of the major response variables given a group member's authorship. Authorship was chosen here instead of participation because of the supposition that a judge is more likely to be able to emphasize what he or she cares about when authoring an analysis — as opposed to just participating on the panel. Thus, differences between the judges would be more evident in their authorship behavior than in their participation behavior. Dissents and concurrences are included in data. Subsets of analyses are comprised of analyses that discussed a single doctrine. As before, *Legal Limits* and *Infringe Stds* reflect groupings of doctrines described in Part II.B. Values greater than one predict an increase in the odds of a successful outcome; values lower than one predict a decrease. Significance is as follows: †≤0.1, *≤0.05, **≤0.01, ***≤0.001. Table 9 presents individual models for each judge-group. It thus reflects how individual judge-groups compare to the court, giving a representation of the magnitude and direction of their effect, and whether their effects are significant (different from zero for reasons other than chance).

doctrines depending on whether an authoring judge belongs to a particular group. For example, authorship by swing judges significantly predicts success for *Wins on Appeal* in analyses that consider Amendment Estoppel,[144] but has no significant effect in analyses that consider the All Elements Rule.[145] By contrast, authorship by proceduralists significantly predicts success for *Wins on Appeal* in analyses that consider the All Elements Rule, but not in analyses that consider Amendment Estoppel.[146] In another example, authorship by judges appointed by President Reagan significantly predicts success in analyses considering Argument Estoppel, but not in analyses considering the All Elements Rule, while authorship by judges appointed by President Clinton significantly predicts success in analyses considering the All Elements Rule, but not in analyses considering Argument Estoppel. Another point of diversity is that authorship by judges that have pre-appointment patent backgrounds significantly predicts *Wins on Appeal* across a number of doctrines.[147]

IV. CONCLUDING REMARKS AND FUTURE DIRECTIONS

The Federal Circuit was uniquely created by Congress to guide and dominate the patent system. Since its creation, it has come to be a powerful force.[148] As the court has grown in power, so too has it grown in apparent importance.[149] So much so that there is now a robust debate surrounding its decision-making and success as an institution.[150]

---

144. *See* Table 9, *supra* p. 462 (3.107**).

145. *See* Table 9, *supra* p. 462 (0.617).

146. *See* Table 9, *supra* p. 462 (compare 3.686** with 0.410).

147. *See* Table 9, *supra* p. 462 (Amendment Estoppel, All Elements, and Function Way Result).

148. *See, e.g.*, Mark D. Janis, *Patent Law in the Age of the Invisible Supreme Court*, 2001 U. ILL. L. REV. 387, 387 (stating that the "Court of Appeals for the Federal Circuit . . . has become the de facto supreme court of patents").

149. *See* PATENTS IN THE KNOWLEDGE-BASED ECONOMY (Wesley M. Cohen & Stephen A. Merrill eds., 2003) (broadly discussing the economic significance of patents); *see also, e.g.*, NTP, Inc. v. Research in Motion, Ltd., 418 F.3d 1282 (Fed. Cir. 2005) (deciding a patent infringement lawsuit in part unfavorably to the makers of the Blackberry wireless email system); MercExchange, L.L.C. v. eBay, Inc., 401 F.3d 1323, 1339 (Fed. Cir. 2005) (reversing the district court's denial of a permanent injunction against infringement), *vacated*, 126 S. Ct. 1837 (2006); Teleflex, Inc. v. KSR Int'l Co., 119 F. App'x 282 (Fed. Cir. 2005) (vacating the district court's grant of summary judgment on the ground of obviousness), *rev'd*, 127 S. Ct. 1727 (2007); Michel, *supra* note 126, at 1181 (noting the "Increased Visibility of the Court of Appeals for the Federal Circuit").

150. *See, e.g.*, A PATENT SYSTEM FOR THE 21ST CENTURY (Stephen A. Merrill, Richard C. Levin & Mark B. Myers eds., 2004) (discussing the role of the Federal Circuit in the patent system). *See generally* ADAM B. JAFFE & JOSH LERNER, INNOVATION AND ITS DISCONTENTS (2004) (discussing and criticizing the performance of the court); Michel, *supra* note 126, at 1181–85 (addressing the debate over the Federal Circuit's increasing role); FTC, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW POLICY (2003), *available at* http://www.ftc.gov/os/2003/10/innovationrpt.pdf

In the tradition of that debate, Professors Nard and Duffy propose undoing Congress's plan. The reason for doing so, they argue, is that the Federal Circuit and Supreme Court have caused a lack of diversity in patent jurisprudence. This Article contributes to this debate by exploring empirically the claim that patent law lacks diversity.

More particularly, this Article frames the central question of diversity in Federal Circuit jurisprudence as a question of jurisprudential diversity — noticeable heterogeneity in the course of a court's decision-making — because it interprets that aspect of diversity to be most central to the critique.[151] It is worth noting again, however, that by focusing on jurisprudential diversity this Article ignores some of the externalities that Professors Nard and Duffy identify as possibly flowing from the current institutional structure.[152] This study is not intended to address the question of whether the Federal Circuit writes good opinions, and it cannot address the questions whether the Federal Circuit develops its jurisprudence at an optimal rate or to an optimal set of decisional rules.

The Article finds, across a number of variables, evidence that does not support the interpretation that there is a lack of jurisprudential diversity. Accordingly, this study suggests a surprisingly affirmative answer to the more general question of whether an appellate court with nearly sole responsibility for a particular subject matter can have jurisprudential diversity. In that light, it also helps to substantiate Congress's decision-making concerning the Federal Circuit's jurisdictional packet against the argument that it necessarily leads to a harmful lack of diversity. Diversity is apparent, and the court might therefore be capable of managing a jurisprudential framework that supplies a pipeline of ideas useful for incrementally advancing the law.[153]

Although the results suggest that Federal Circuit jurisprudence is diverse and might therefore be able to evolve through the incremental selection of competing views, the results raise more — and perhaps more interesting — questions than they answer. What does Federal Circuit decision-making look like? How does change happen at the Federal Circuit, and is it suitable for the patent law? The remainder of this Part highlights some of the questions about Federal Circuit jurisprudence raised by this study. The purpose is not to resolve these

---

(addressing the role of the Federal Circuit in setting the appropriate balance between competition and patent law and policy).

151. *See supra* Part I.

152. *See supra* notes 80–81; *see also supra* Part III.

153. It is clear that the Federal Circuit uses its en banc authority in cases involving patent law, *see* cases cited *supra* note 23, although no empirical claim can be made here that this is done well. It is likewise clear that the Supreme Court supervises Federal Circuit decision-making. *See* cases cited *supra* note 23. Also, there are other ways that change can be infused through the Federal Circuit into patent jurisprudence. *See* discussion *infra* Part IV.B.

questions, or even to analyze them deeply, but only to highlight them, for the issues themselves are easily the subject of years of future work and thousands of additional pages, and are well beyond the scope of this Article.

A. Decision-Making in a Single Appellate Court Model

One interpretation of the heterogeneity evident in the results of this study is that the grasp of path dependency is not so strong at the Federal Circuit. This interpretation finds its footing in the observation that outcomes depend on judges — even when those judges are contemporaries[154] — and groups of judges.[155] Indeed, even outcomes in analyses that discuss particular aspects of the doctrine of equivalents are judge-dependent.[156] Taken together, the results suggest the idea that Federal Circuit jurisprudence could be accurately characterized as finer-grained, and populated by opinions that might be described as numerous, specific, loosely governed, and not generally amenable to broad reading. This suggests the idea that the court's early resolutions of legal issues did not broadly lock in strict rules, and that early decisions might not impose a rigidity that prohibits the court from reaching good and efficient results on most sets of facts.

If so, it is worth considering how the court's body of law may have developed to promote this sort of flexibility. One possibility is that the court has developed this area of the law in the direction of standards. Another is that the observed differences reflect a degree of tolerance between judges. Perhaps the fact that the judges work in the same complex and are thus likely to see each other regularly reinforces a norm of consensus decision-making and mutual respect that allows for a degree of decisional flexibility. Still another possibility is that the diversity suggested by this study is a normal characteristic of a court at this stage in the (re)development of a jurisprudence.[157] A purpose of the Federal Circuit was to move patent jurisprudence, and perhaps it is still doing so. The diversity could have other explanations as well. Perhaps the rule that the court faithfully abide by its precedents is too difficult to follow strictly;[158] or perhaps, some

154. *See supra* Part III.B.2.

155. *See supra* Part III.B.3.

156. *See* Table 9 and accompanying discussion, *supra* p. 462.

157. *See generally* Dreyfuss, *In Search of Institutional Identity*, *supra* note 17, at 801–03 (emphasizing the youthfulness of the court).

158. *See* Paul M. Janicke, *On the Causes of Unpredictability of Federal Circuit Decisions in Patent Cases*, 3 NW. J. TECH. & INTELL. PROP. 93, 97–98 (2005) (suggesting that the volume of the court's writings may make consistently following precedent somewhat difficult). If the judges are unable to follow the precedent, one might expect a more random distribution of outcomes. But it is still possible that the precedents are such that they can be followed by the judges; they just happen to lead different judges to different places.

judges disregard the rule, confident in their own views of the merits of a case.

However it came to be, the basic observation of diversity in Federal Circuit jurisprudence presents the interesting possibility that rather than being too uniform, Federal Circuit jurisprudence might be too diverse. The case for too much diversity includes the following arguments. First, the empirical data suggests it. The judge-specific differences detected in this study suggest the interpretation that differences do make their way into Federal Circuit case law. Moreover, prior empirical work has identified unresolved doctrinal conflict as a feature of Federal Circuit jurisprudence.[159]

Second, there is some measure of conceptual support for the idea that the Federal Circuit is too diverse. Questions of first impression provide opportunities for new law. Moreover, if one is comfortable resisting the idea that stare decisis is a precise, formal, and almost always determinative force in law, some of the considerations just discussed (e.g., judges working in close proximity, difficulty or disregard in following complex precedent) suggest plausible ways through which doctrinal variation can be introduced in a jurisprudence.[160]

Third, a national appellate court like the Federal Circuit has at least one fewer tool — the exploitation of disagreements with other circuits — than the geographically limited circuits to weed out competing precedents. It is therefore at least possible that once a precedent gets put into the body of Federal Circuit law, the probability that the precedent is later culled is lower, compared to regional circuit case law.

Taken together then, it is at least possible that areas of law within the Federal Circuit's jurisdiction might actually have more variety than a comparative area of law subject to regional circuit jurisdiction. This idea presents the rather interesting question of how stripped of variation a body of law should be, and the related question of how much pruning and remodeling of a body of law is optimal?[161]

A body of law characterized by larger numbers of competing pronouncements may have some positive characteristics. Judges should find it easier to reach what they think is the correct result on a case-by-case basis because they are more likely to find supportive prece-

159. Indeed, earlier empirical research into Federal Circuit jurisprudence suggested that this problem should be addressed. *See* Wagner & Petherbridge, *supra* note 39, at 1176–79 (calling for greater doctrinal "evangelism and enforcement" on the part of individual judges, and suggesting that the Federal Circuit seek greater assistance from the Supreme Court).

160. Indeed, in contrast to the argument that stare decisis and path dependency are strong forces in Federal Circuit patent jurisprudence, some have criticized the Federal Circuit for evading its precedents. *See, e.g.*, Matthew F. Weil & William C. Rooklidge, *Stare Un-Decisis: The Sometimes Rough Treatment of Precedent in Federal Circuit Decision-Making*, 80 J. PAT. & TRADEMARK OFF. SOC'Y 791, 793–94 (1998) (arguing that the Federal Circuit's lack of respect for its own precedent is making the patent law more unpredictable).

161. *See* Nard & Duffy, *supra* note 17, at 1627, 1637 (emphasizing optimization).

dent. With fewer arguments definitively excluded, parties should expect to find more support in case law for novel claims about the content of the body of law, and more support for arguments to extend the law.[162] In this way, while a diverse body of more loosely governed writings might increase uncertainty, it might also support a reasonably constrained realism-oriented decision-making that some constituencies might value. In that sense competing pronouncements may be a positive feature of a body of jurisprudence, keeping competing principles and policies alive that otherwise might be lost.

At some point, however, one suspects that a rarely policed jurisprudence would become too uncertain. Written opinions would mean next to nothing to the point that appellate judges might as well write only *affirmed*, *reversed*, or *vacated*. Thus the problem: how much pruning and remodeling? Is a multi-circuit model, which Nard and Duffy suggest selects more quickly, the right one? Or is the current Federal Circuit model that may emphasize a greater degree of granularity and tolerance for inconsistency, policed for the most part by Supreme Court review and en banc process — one that Nard and Duffy suggest selects too slowly (and not very well) — better tailored to provide a more beneficial jurisprudence?

While the optimal rate of change could differ in different areas of law,[163] there is likely enough evidence in the numbered circuit courts of appeals' jurisprudence to get a sense of whether it is a good idea to leave some amount of competing precedent in place, as well as whether significant jurisprudential changes should happen continuously or whether they should happen on a more punctuated schedule. Empirical work could be performed examining circuit splits that were conclusively resolved by the Supreme Court. This work could be used to look at the effect of those resolutions on the relevant body of law and relevant markets. Economics- and social sciences-driven approaches could be used to evaluate normatively effect of culling competing views. These same approaches[164] and other interpretive work can address the issue of whether fundamental principles of fairness and justice would have been better served if the competing views had been allowed to remain viable for longer periods of time.

In addition, other sorts of comparative approaches are available. In some ways, the Supreme Court is like the Federal Circuit in that it

---

162. In this sense practitioners might prefer jurisprudential diversity because they would have many tools with which they could make and support arguments. It has been argued that practitioners prefer the Federal Circuit model. *See* Dreyfuss, *Continuing Experiment in Specialization*, *supra* note 17, at 770.

163. For instance, the increasing complexity of patents may demand some jurisprudential flexibility that might be lost if patent jurisprudence becomes too lean. *See, e.g.*, Allison & Lemley, *supra* note 38, at 78–80 (arguing that the patent system has grown in complexity).

164. Research could also be directed to developing a field of work to measure and assess diversity in a body of law.

is unlikely to run into conflicting writings other than its own. Does the Supreme Court look like the Federal Circuit in that it has a lot of widely varying conflicting writings? It if does not, why not? Could the means it uses to avoid the problem be applied to the Federal Circuit? If the jurisprudential topography of the Supreme Court is similar in structure to that of the Federal Circuit, would that suggest that there is no genuine problem with Federal Circuit jurisprudence? Or would it suggest the opposite?

B. What Drives Jurisprudential Change in the Federal Circuit Model?

The critique of the current institutional arrangement emphasizes the assertion that there is such a lack of equality between the Federal Circuit and the other institutional players in the patent system.[165] Consequently, it is argued, these other players — Congress, the Supreme Court, district courts, and the United States Patent and Trademark Office ("USPTO") — cannot effectively contribute to the development of patent law. As discussed in more detail below, this assertion obviously warrants further research and study.

As a threshold matter, however, the fundamental correctness of the idea that legal change in the patent system is dominated by the Federal Circuit, or any of these actors, deserves further study. It might well be the case that other forces and actors dominate the levers of legal change in the patent system. For example, diversity in the areas of technological innovation, market conditions, parties, patents, and presentations of disputes could be a more dominating force for change in patent law than any of the above-referenced actors.

1. Judges

One means of legal change that should not be overlooked is judicial identity. Prior work has provided evidence that court personnel can be quite important to jurisprudential change.[166] There are also conventional wisdom sorts of examples of this phenomenon.[167] Yet

---

165. *See* Nard & Duffy, *supra* note 17, at 1639–41 (arguing that the Federal Circuit "has no effective peer or competitor").

166. *See* Wagner & Petherbridge, *supra* note 39, at 1154–55 (arguing this based on observations from Federal Circuit case law).

167. Judge Lourie's participation, for example, has been associated with the rediscovery, or depending on the point of view, creation, of the modern written description requirement. *See supra* Part III.B.1; *see also, e.g.*, Univ. of Rochester v. G.D. Searle & Co., 358 F.3d 916 (Fed. Cir. 2004) (Lourie, J.) (involving written description requirement); Enzo Biochem, Inc. v. Gen-Probe Inc., 323 F.3d 956 (Fed. Cir. 2002) (Lourie, J.) (same); Gentry Gallery, Inc. v. Berkline Corp., 134 F.3d 1473 (Fed. Cir. 1998) (Lourie, J.) (same); Regents of the Univ. of Cal. v. Eli Lilly & Co., 119 F.3d 1559 (Fed. Cir. 1997) (Lourie, J.) (same), Fiers v. Revel, 984 F.2d 1164 (Fed. Cir. 1993) (Lourie, J.) (same).

judges often seem an underemphasized variable when discussions turn to how the law develops at the Federal Circuit.

The results of this study add more support to the idea that individual judges are important when it comes to change in the patent law. Contemporary judges differ in their behaviors, and groups of judges can be identified that have different views of the merits of the cases the court hears. The different views gain purchase in the jurisprudence through conventional structural mechanisms, namely stare decisis and attendant path dependency (however imperfect its actual strictness).

Moreover, judges do not shape jurisprudence just by writing majority opinions for the court. Judge Newman has remarked how, at the Federal Circuit, the:

> "[P]ercolation" of divergent views illustrates the vigor of the judicial search for truth, the sometimes indirect progress toward the justice and fairness that animate the law. Such divergence also reflects the court's "activism," as new facts lead it into areas of uncertain public policy, and the court brings its own viewpoints to bear on the jurisprudence assigned to it.[168]

The results presented in the earlier Parts, showing significantly different outcome preferences across judges and doctrines, would appear to support that claim. The results pertaining to alternative writings (dissents and concurrences) presented in Table 6 also appear to support Judge Newman's view. In a brief paragraph, however, Nard and Duffy dismiss alternative writings at the Federal Circuit as largely unhelpful in the process of shaping jurisprudence: "[C]ompetent attorneys are highly unlikely to base their arguments on *dissenting* opinions from that circuit, and so the intracircuit percolation tends to exclude the participation of the bar in the legal and policy debate."[169]

Further work should examine the depth of the correctness of this statement. While it is sensible to think that a competent party would rarely directly rely on a Federal Circuit dissent as the primary source of authority for an appeal before the Federal Circuit, it seems equally sensible to think that a court's alternative writings (dissents and concurrences) give information to parties and the bar more generally;

---

168. Pauline Newman, *The Federal Circuit: Judicial Stability or Judicial Activism?*, 42 AM. U. L. REV. 683, 683 (1993); *see also* Univ. of Rochester v. G. D. Searle & Co., 375 F.3d 1303, 1305 (Fed. Cir. 2004) (en banc) (Newman, J., dissenting) ("The issue of whether patent law contains a separate written description requirement has percolated through various panels of this court, on a variety of facts. The differences of opinion among the judges of the Federal Circuit, are, in microcosm, the 'percolation' that scholars feared would be lost by a national court at the circuit level.").

169. Nard & Duffy, *supra* note 17, at 1647.

information to which competent parties might be expected to pay attention. Alternative writings seem useful not only for crafting petitions for rehearing and certiorari, but also for crafting future arguments, crafting strategies for developing issues in lower courts and at the Patent Office, and for presenting related issues to the Federal Circuit in future appeals. Moreover, alternative writings would seem to be a valuable resource for legal scholars and social science researchers who work their influence in law by thinking and writing about its meaning and impact.

Future work should be directed to examining the effect of the Federal Circuit's alternative writings. Do practitioners, the bar, legislators, and scholars largely ignore them, or do alternative writings have influence? To what extent do the views expressed in alternative writings eventually make their way into the jurisprudence? If some do, what are the characteristics of dissents and concurrences that have this effect?

2. Other External Mechanisms: The Role of the USPTO

Nard and Duffy observe that the Patent Office "is perhaps the best institutional candidate" to help the Federal Circuit shape jurisprudence.[170] This stands to reason since much of the complexity in the patent system is present in the incredibly diverse set of matters with which the USPTO deals. Although the USPTO does not have substantive rulemaking power, it, importantly, does have procedural rulemaking power.[171] Its interpretations of its own rules are given a high degree of deference at the Federal Circuit,[172] and guidelines it authors for its employees for use in interpreting statutes and case law[173] also carry weight at the Federal Circuit.[174] Thus, the USPTO enjoys considerable sway over the shape of patent jurisprudence.[175] But as Nard

170. *Id.* at 1640–41.

171. *See* Merck & Co. v. Kessler, 80 F.3d 1543, 1549–50 (Fed. Cir. 1996). For an example of the USPTO using the premise of this power to make potentially important changes in patent law and practice, see Changes to Practice for Continuing Applications, Requests for Continued Examination Practice, and Applications Containing Patentably Indistinct Claims, 71 Fed. Reg. 48 (proposed Jan. 3, 2006) (to be codified at 37 C.F.R. pt. 1); *see also* Tafas v. Dudas, 541 F. Supp. 2d 805 (E.D. Va. 2008), *aff'd in part, vacated in part sub nom.* Tafas v. Doll, 559 F.3d 1345 (Fed. Cir. 2009) (providing an example of the USPTO litigating — at least in part successfully — its power to manipulate rules governing continuations)

172. Stevens v. Tamai, 366 F.3d 1325, 1335 (Fed. Cir. 2004) ("[T]he Office's interpretation of its own regulations is entitled to substantial deference.").

173. *See, e.g.*, Utility Examination Guidelines, 66 Fed. Reg. 1092 (Jan. 5, 2001); Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in View of the Supreme Court Decision in *KSR International Co. v. Teleflex Inc.*, 72 Fed. Reg. 57526 (Oct. 10, 2007).

174. *See In re* Fisher, 421 F.3d 1365, 1372 (Fed. Cir. 2005) (discussing the USPTO's utility guidelines with approval).

175. The USPTO exercises controlling influence and receives deference in other important areas as well. For example, the Federal Circuit has solicited the USPTO's view on

and Duffy note, the USPTO has seemed less involved in recent years when it comes to using the courts to shape patent law.[176] Why the USPTO has retreated from this tactic presents an interesting and important question. Future work could attempt to illuminate how or why it happened, and depending on what is learned, perhaps the USPTO's absence could be remedied.[177]

3. Internal Mechanisms

Future work could examine the Federal Circuit's en banc process in patent cases. If more en banc hearings are appropriate, perhaps the Federal Circuit could grant petitions with fewer votes than are currently required. Alternatively, given the somewhat unique footprint of the Federal Circuit, perhaps there is merit in a special certification process through which panels, or perhaps the court, could certify opinions addressing certain issues as warranting special consideration from the Supreme Court.[178] Perhaps, too, the Federal Circuit should revisit the publication of panel information well in advance of argument. Prior empirical work narrowly rejected this prescription for the Federal Circuit due to the concern that it would skew the development of jurisprudence by biasing appeals and decreasing the opportunities for some judges to write.[179] But if the publication of panel composition information has the effect of reducing appeals for cases in which parties are prepared to settle, it might possibly increase the production of opinions pertaining to cases involving controversies of broader economic and social significance. This could have the effect of increasing the extremity and visibility of divisions in a way that could better encourage the Supreme Court or Congress to get involved.

---

important patent law issues. *See* Phillips v. AWH Corp., 376 F.3d 1382, 1383–84 (Fed. Cir. 2004) (en banc) ("In particular, the United States Patent and Trademark Office is invited to submit an *amicus curiae* brief.").

176. Nard & Duffy, *supra* note 17, at 1641 n.79 (noting the Patent Office's limited efforts in regard to petitioning the Supreme Court for certiorari since the Federal Circuit's creation).

177. For example, the USPTO's retreat from this important role might reflect little more than a policy choice on behalf of the executive branch. If so, changes in the executive branch might prompt the USPTO to return to this role. The retreat might alternatively reflect a policy choice by the USPTO's Solicitor, or perhaps by the Director. In that case, if the new Solicitor, or a new Director, were to have a different view of the role of the USPTO, the USPTO could return to this role.

178. It should be noted that recent work cautions against relying too much on the Supreme Court for substantive guidance in this area of the law. Rather, the work suggests that the role of the Supreme Court should be more that of a disruptor — it should use its review authority not to settle issues of patent law, but rather to open new issues, or as the case may be, reopen issues in areas "where there is a substantial risk that the Federal Circuit has frozen legal doctrine either too quickly or for too long." *See, e.g.*, Golden, *supra* note 44, at 662.

179. *See* Wagner & Petherbridge, *supra* note 39, at 1174–75.

C. The Suitability of the "Small-Law" Federal Circuit Model

The results here suggest the idea that the Federal Circuit has developed a "small-law" framework for patent law — one that emphasizes decisions of modest precedential value, and that might "wobble" around a nucleus of standards. If it has, it opens for further work the question whether this sort of framework is suitable for the patent law. A full answer to this question awaits future work. But as a preliminary matter, when one further frames the question, what the Federal Circuit seems to be doing looks like a sensible response in context.

Patent law presents a number of critical jurisprudential difficulties. Among the broadest stems from the fact that patents have enough of the attributes that attend property to be conventionally understood as a kind of property; a fact that many would agree generally argues for less volatility in the rules defining the scope of rights than in some other areas of law. However, patent law may contrast to the law attending the more conventional "things" to which we associate the label property in that patent law may have to account for a much larger and more varied genus of things: things existing in a great variety of technological and market contexts, things at the very edge of human knowledge, things lacking the familiarity of a long history with humankind, and things often lacking for well-developed descriptive vocabularies. Moreover, patent law must account for rights in such things that can occasionally confer dominating market power and occasionally deeply affect the public interest.

Balancing the property aspects of patents (clearer rights, enforceable broadly), with the public policy risks that are occasionally implicated by a grant of patent rights — and doing so in a milieu of novel and sometimes poorly defined subject matter — might encourage a decision-maker to be conservative in its approach. One seemingly rational way to be conservative in this context is to resist imposition of very strong formal constraints on one's decision-making. A sensible way to do that is to keep the law smaller by avoiding adopting broad strictly controlling precedents, being flexible in reading what has been written, and showing increased tolerance for varying or unexpected interpretations. Another complementary approach could be to emphasize a standards-oriented framework. Indeed, this is largely the approach taken by the Patent Act itself. Its generality[180] and lack of specification is famous and provides the rationale used by many law professors to describe patent law as a common law-like subject.

With these tools in hand, a court could have the flexibility to reach what it sees as the right result in most cases. It could still promote uniformity of doctrinal development by utilizing a judiciary that

180. *See* Janicke, *supra* note 158, 94–96 (2005) (fingering, inter alia, the broad general terms in which the Patent Act is written as a cause of unpredictability in the patent system).

is widely acknowledged as highly skilled and capable of great nuance in interpreting patent law. It could also promote such uniformity by limiting major formal changes (which might often be attended by big shifts in wealth distribution) to relatively punctuated and often well-noticed schedules like en banc process, Supreme Court review, and legislative development. Of course, if this small-law description does accurately characterize the Federal Circuit's approach to managing and developing patent law, some will no doubt question — however sensible the approach seems — whether the court should be so conservative and whether, instead, it should more forcefully prescribe rules and guidance.