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MARKMAN TWENTY YEARS LATER: TWENTY YEARS OF
UNINTENDED CONSEQUENCES

Jerry A. Riedinger^{*}

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ABSTRACT

The Federal Circuit's Markman decision removed juries from the claim interpretation process, thereby revolutionizing patent law. Designed to provide greater certainty and predictability, Markman nevertheless produced unintended consequences, increasing ambiguity and complexity. By declaring claim interpretation an entirely legal issue, the Federal Circuit imposed intricate and even contradictory rules, many resulting from the Federal Circuit's long insistence that no issues of fact existed, so that claim construction was entirely subject to de novo review. The uncertainty was compounded by rules focused on semantic quibbles unrelated to what was invented. Increased burdens and continuing uncertainty followed.

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INTRODUCTION

Three tectonic shifts have marked the last seventy years in patent litigation. The first resulted from the 1952 patent act, which untangled the law and codified a liberal view of how much

“invention” was needed for patentability. The second was the creation of the Federal Circuit, which removed patent appeals from the disinterested or even hostile regional circuit courts, especially the rabidly anti-patent Eighth Circuit. The third came from the Federal Circuit’s decision in *Markman v. Westview Instruments, Inc.*,¹ which separated claim construction from the jury’s infringement analysis. Of the three, *Markman* continues to have the greatest impact, with crucial questions still unresolved after twenty years.

Markman was ostensibly intended to produce greater clarity and predictability in patent cases by placing the interpretation of a patent’s scope solely in the hands of judges—who were asserted to be better suited to the intricacies of claim interpretation. Underlying the ostensible grounds was a deep enmity toward jurors in patent cases and a desire for unimpeded Federal Circuit review of patent scope, a desire that had been thwarted by the rise of patent juries. Yet *Markman* produced a host of unexpected results: less predictability, district judge irritation, and ever increasing litigation costs. But most important was the transformation of claim analysis from a focus on the invention to an elaborate manipulation of words unhinged from the purpose of the patent system. Despite twenty years of refinement, *Markman*’s legacy remains a difficult work-in-progress.

I. THE ROAD TO *MARKMAN*

Markman arose in response to increasing use of juries, especially following the creation of the Federal Circuit. Once jury trials began to predominate, dissatisfaction with the competence of juries mushroomed, especially among losing defendants and attorneys representing companies who had long ignored patents. The dissatisfaction grew further as the Federal Circuit transformed patent law from a mostly-ignored backwater into an economic force, while simultaneously endorsing a broad role for juries. Attorneys, corporate counsel, and academics, appalled at juror attitudes, jury nullification and juror damage awards, thus sought a

¹ 52 F.3d 967 (Fed. Cir. 1995), *aff’d*, 517 U.S. 370 (1996).

way to thwart the juror virus. Simultaneously, the limited review of jury decisions frustrated attorneys and some Federal Circuit judges. The United States Constitution's Seventh Amendment² imposed a serious obstacle to jury elimination,³ so jury opponents looked for a new route to limiting juries. The result was *Markman*, an inelegant tool that limited the role of juries but created a host of new problems.

A. *The Rise of Patent Juries*

Juries have long been present in patent cases, even before the adoption of the Constitution in 1789,⁴ and the passage of the first patent act in 1790.⁵ Yet until the late 1970s, juries in patent cases were the rare exception. Patent attorneys and their clients had little experience with juries and jury trials, and were reluctant to deviate from common practice. Then, as now, many patent specialists

² U.S. CONST. amend. VII (“In suits at common law, where the value in controversy shall exceed twenty dollars, the right of trial by jury shall be preserved . . .”).

³ *E.g.*, *Jacob v. City of New York*, 315 U.S. 752, 752–53 (1942) (“The right of jury trial in civil cases at common law is a basic and fundamental feature of our system of federal jurisprudence which is protected by the Seventh Amendment. A right so fundamental and sacred to the citizen, whether guaranteed by the Constitution or provided by statute, should be jealously guarded by the courts.”); *Dimick v. Schiedt*, 293 U.S. 474, 486 (1935) (“Maintenance of the jury as a fact-finding body is of such importance and occupies so firm a place in our history and jurisprudence than any seeming curtailment of the right to a jury trial should be scrutinized with the utmost care.”); *Parsons v. Bedford*, 28 U.S. (3 Pet.) 433, 446 (1830) (“The trial by jury is justly dear to the American people. It has always been an object of deep interest and solicitude, and every encroachment upon it has been watched with great jealousy.”).

⁴ *E.g.*, *Winans v. New York & Erie R.R. Co.*, 62 U.S. (21 How.) 88, 100 (1859); *Parker v. Hulme*, 18. F. Cas. 1138 (C.C.E.D. Pa. 1849) (No. 10,740); *Turner v. Winter*, [1787] 99 Eng. Rep. 1274 (K.B.); *Arkwright v. Nightingale*, [1785] 1 Carp. P.C. 38 (C.P.); *Liardet v. Johnson*, [1778] 1 Carp. P.C. 35 (K.B.) (discussed in 1 JAMES OLDHAM, *THE MANSFIELD MANUSCRIPTS AND THE GROWTH OF ENGLISH LAW IN THE EIGHTEENTH CENTURY* 748 (1992)).

⁵ Patent Act of 1790, ch. 7, 1 Stat. 109–12 (1790). The Act provided, among other things, that the patent owner can be awarded “such damages as shall be assessed by a jury . . .”

viewed juries with alarm; they were considered incompetent to handle complex technology, and the specialists assumed federal judges, all of whom had higher than average intelligence, were more suited to dealing with the technical and legal esoterica arising in nearly every patent case. Moreover, a general movement challenging the suitability of juries in complex cases gained momentum in the 1970s,⁶ giving patent litigants further ammunition to try to avoid juries.⁷

Despite the common disdain for patent juries, a countermovement arose in the 1970s, based upon a simple belief: jurors decided patent cases differently from judges, and that difference benefited patent owners more than defendants.⁸ That

⁶ Much of the movement arose after the famous footnote 10 in *Ross v. Bernhard*, 396 U.S. 531 (1970), which seemed to suggest that the Seventh Amendment right to a jury hinged, in part, on “the practical abilities and limitations of juries.” *Id.* at 538 n.10. District courts then rejected juries in complex cases in a late 70s flurry, e.g., *ILC Peripherals Leasing Corp. v. IBM*, 458 F. Supp. 423, 448 (N.D. Cal. 1978); *Bernstein v. Universal Pictures, Inc.*, 79 F.R.D. 59, 71 (S.D.N.Y. 1978); *In re U.S. Financial Sec. Litig.*, 75 F.R.D. 702, 705 (S.D. Cal. 1977); *In re Boise Cascade Sec. Litig.*, 420 F. Supp. 99 (W.D. Wash. 1976). The movement culminated in the Third Circuit’s decision in *In re Japanese Electronic Products Antitrust Litigation*, 631 F.2d 1069 (3d Cir. 1980), holding that the Fifth Amendment due process clause created a “complexity” exception to the right to jury trials in civil cases. Many scholars called for the end of juries in complex cases. E.g., James S. Campbell, *Complex Cases and Jury Trials: A Reply to Professor Arnold*, 128 U. PA. L. REV. 965 (1980); Kathy E. Davidson, *The Right to Trial by Jury in Complex Litigation*, 20 WM. & MARY L. REV. 329 (1978). The issue was not formally resolved by the Supreme Court, and the “complexity” exception remains the subject of discussion even today. See, e.g., Mark A. Lemley, *Why Do Juries Decide if Patents are Valid?*, 99 VA. L. REV. 1673 (2013).

⁷ See, e.g., Gary M. Ropski, *Constitutional and Procedural Aspects of the Use of Juries in Patent Litigation (Part I)*, 58 J. PAT. & TRADEMARK OFF. SOC’Y 609, 616 (1976) (“Ross may provide support for the argument that the right to jury trial can be limited by the inability of jurors to understand the complex patents and technology at issue.”).

⁸ Early commenters suggested that juries should be considered when sympathy is desired for individual inventors or when the defendant is a large corporation. See, e.g., George B. Newitt & Jon O. Nelson, *The Patent Lawyer and Trial by Jury*, 1 JOHN MARSHALL J. PRAC. & PROC. 59 (1967). The evidence that jurors are pro-patent is now well-established. See, e.g., Mark A. Lemley, Jamie Kendall & Clint Martin, *Rush to Judgment? Trial Length and Outcomes*

difference in outcomes swept most opposition aside. Before the 1970s, juries rarely appeared in even 10% of the trials.⁹ By the end of the 1970s, patent cases were tried to juries in at least 10%,¹⁰ and that number steadily increased to 70% by 1994,¹¹ the year before *Markman*. Despite the ever-present disdain for juror competence, most patent litigators concluded by the mid-1980s that proper representation of patent owners required a jury demand. Patent jury trials then became the norm,¹² no doubt spurred by high profile plaintiff jury wins, such as the celebrated decision in *Roberts v. Sears, Roebuck & Co.*¹³ Patent litigators were forced to scramble to

in Patent Cases, 41 AIPLA Q.J. 169 (2013); John R. Allison & Mark A. Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 AIPLA Q.J. 185, 213 (1998) (“[J]uries are likely to favor patentees and unlikely to second-guess the decision of the PTO.”). Interestingly, articles discussing the phenomenon were non-existent in the 1970s, although the author remembers the topic as one of frequent discussion in patent circles by 1980. An example is Ropski, *supra* note 7, at 612, which merely noted that “the sight of the ribbon and seal on the official Letters Patent impresses the jury with the presumption of validity.” It may be that practitioners began recognizing the possibilities described in scholarly articles in the 1960s, e.g., Ralph W. Launius, *Some Aspects of the Right to Trial by Jury in Patent Cases*, 49 J. PAT. & TRADEMARK OFF. SOC’Y 112 (1967).

⁹ ADAM B. JAFFE & JOSH LERNER, *INNOVATION AND ITS DISCONTENTS: HOW OUR BROKEN PATENT SYSTEM IS ENDANGERING INNOVATION AND PROGRESS, AND WHAT TO DO ABOUT IT* 123 (Princeton University Press 2004). The Supreme Court noted in *Blonder-Tongue Lab. v. Univ. of Ill. Found.*, 402 U.S. 313, 336 n.30 (1971), that only 13 of 382 patent trials between 1968 and 1970 were tried to a jury.

¹⁰ *Id.* See also HERBERT F. SCHWARTZ & ROBERT J GOLDMAN, *PATENT LAW AND PRACTICE* 130 (2d. ed. 1995) (tabulating data).

¹¹ *Id.*

¹² An excellent discussion of the transition from bench to jury trials in patent cases is contained in Lemley, *supra* note 6, at 1675.

¹³ 723 F.2d 1324 (7th Cir. 1983). Roberts, a non-practicing inventor, sued Sears in 1977 for infringement of his patent on a quick-release socket wrench. The jury found the then unusual sum of \$5 million in damages, which was increased by the district court to \$8,190,254. *Id.* at 1328–29. The case generated much then unheard of press publicity for a patent case, including an article in *Time* magazine. See *Wrenching Sears*, *TIME*, Oct. 23, 1978, available at <http://content.time.com/time/magazine/article/0,9171,946093,00.html>. Interestingly, the key holding by the Seventh Circuit was that patent validity was a legal issue, such that jurors could not decide validity in patent cases. *Roberts*, 723 F.2d at 1343. The Seventh Circuit also noted, without citation, that

gain jury skills in the 1980s, as trials conducted by non-patent specialists (who understood juries) produced repeated victories for patent owners—in cases where traditional thinking suggested that judges would have decided for the defendant.

The Federal Circuit's birth in 1982 cemented the role of juries in patent suits.¹⁴ Created to provide greater uniformity in patent law (among other things), the Federal Circuit immediately began resolving the patent law differences that had existed among the regional circuits.¹⁵ The Federal Circuit, however, did not see a need to limit the role of juries in patent cases. Despite the Seventh Circuit's 1983 holding that juries could not decide patent validity or interpret patent claims,¹⁶ the Federal Circuit declined all early opportunities to restrain juries. Instead, the Federal Circuit roundly approved of juries in patent cases at its first opportunity.¹⁷ The

“[c]onstruction of the patent claim . . . is a matter of law for the court,” thereby anticipating *Markman* by twelve years. *Id.* at 1338.

¹⁴ The Federal Circuit was created by the Federal Courts Improvement Act of 1982, Pub. L. No. 97-164, 96 Stat. 25, 37–39 (1982). It decided its first case on October 28, 1982. *South Corp. v. United States*, 690 F.2d 1368 (1982).

¹⁵ Those differences included substantial hostility to patents. Perhaps the best expression of that hostility can be found in a Congressional study, which concluded: “If we did not have a patent system, it would be irresponsible, on the basis of our present knowledge of its economic consequences, to recommend instituting one. But since we have had a patent system for a long time, it would be irresponsible, on the basis of our present knowledge, to recommend abolishing it.” STAFF OF S. SUBCOMM. ON PATENTS, TRADEMARKS, AND COPYRIGHTS OF THE COMM. ON THE JUDICIARY, 85TH CONG., AN ECON. REVIEW OF THE PATENT SYS. 80 (Comm. Print 1958) (prepared by Fritz Machlup, Department of Political Economy, Johns Hopkins University). The hostility is generally outlined in Martin J. Adelman, *The New World of Patents Created by the Court of Appeals for the Federal Circuit*, 20 U. MICH. J.L. REFORM 979, 980–81 (1987).

¹⁶ *Roberts*, 723 F.2d at 1332. Much of the initial work of the Federal Circuit focused on eliminating the conflicts created by the regional circuits, a task the Federal Circuit accomplished quickly. See Howard T. Markey, *The Federal Circuit and Congressional Intent*, 41 AM. U. L. REV. 577 (1992).

¹⁷ *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1547 (Fed. Cir. 1983). Among other things, the Federal Circuit (Markey, C.J.) stated “[n]o warrant appears for distinguishing the submission of legal questions to a jury in patent cases from such submissions routinely made in other types of cases. So long as the Seventh Amendment stands, the right to a jury trial should not be rationed, nor should particular issues in particular types of case be treated differently from

Federal Circuit thereafter repeatedly affirmed use of juries in patent cases, including jury construction of claim terms.¹⁸ Combined with a distinctly more “pro-patent” outlook than had been exhibited by the regional circuits,¹⁹ the Federal Circuit’s decisions quickly cemented a prominent juror role in patent cases. Juries, once an oddity, now dominated the patent world.

B. Hostility to Patent Juries

The ascension of patent juries was matched by a growing

similar issues in other types of cases.” *Id.* The Federal Circuit’s first Chief Judge also expressly opined in dicta against eliminating patent juries based upon the alleged “complexity” exception: “We discern no authority and no compelling need to apply in patent infringement suits for damages a ‘complexity’ exception denying litigants their constitutional right under the Seventh Amendment.” *SRI Int’l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1130 (Fed. Cir. 1985) (addendum opinion by Chief Judge Markey, joined by Judge Newman).

¹⁸ *E.g.*, *Delta X Corp. v. Baker Hughes Prod. Tools, Inc.*, 984 F.2d 410, 415 (Fed. Cir. 1993); *Lemulson v. Gen. Mills, Inc.*, 968 F.2d 1202, 1206–07 (Fed. Cir. 1992), *cert. denied*, 113 S.Ct. 976 (1993); *Tol-O-Matic, Inc. v. Promo Produkt Und Marketing Gesellschaft m.b.H.*, 945 F.2d 1546, 1549–50 (Fed. Cir. 1991); *Snellman v. Ricoh Co.*, 862 F.2d 283, 287–88 (Fed. Cir. 1988), *cert. denied*, 491 U.S. 910 (1989); *Perini Am., Inc. v. Paper Converting Mach. Co.*, 832 F.2d 581, 584 (Fed. Cir. 1987); *Tillotson, Ltd. v. Walbro Corp.*, 831 F.2d 1033 (Fed. Cir. 1987); *Tandon Corp. v. U.S. Int’l Trade Comm’n*, 831 F.2d 1017 (Fed. Cir. 1987); *Vieau v. Japax, Inc.*, 823 F.2d 1510 (Fed. Cir. 1987); *Data Line Corp. v. Micro Techs., Inc.*, 813 F.2d 1196 (Fed. Cir. 1987); *H.H. Robertson Co. v. United Steel Deck, Inc.*, 820 F.2d 384 (Fed. Cir. 1987); *Moeller v. Ionetics, Inc.*, 794 F.2d 653 (Fed. Cir. 1986); *Palumbo v. Don-Joy Co.*, 762 F.2d 969, 974 (Fed. Cir. 1985); *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707 (Fed. Cir. 1984); *Bio-Rad Labs., Inc. v. Nicolet Instrument Corp.*, 739 F.2d 604, 613 (Fed. Cir. 1984), *cert. denied*, 469 U.S. 1037 (1984); *McGill, Inc. v. John Zink Co.*, 736 F.2d 666, 672 (Fed. Cir. 1984), *cert. denied*, 469 U.S. 1037 (1984).

¹⁹ *See, e.g.*, William M. Landes & Richard A. Posner, *An Empirical Analysis of the Patent Court*, 71 U. CHI. L. REV. 111, 112 (2004). Several press articles in the 1980s noted the increasing importance of patents resulting from the Federal Circuit’s creation. Jill Andresky, *A Weapon at Last*, FORBES, Mar. 10, 1986, at 46; Anthony Baldo, *Juries Love the Patent Holder*, FORBES, June 17, 1985, at 147; Toni Mack, *A Change in the Legal Climate*, FORBES, Oct. 7, 1985, at 41; Nancy Perry & David Kirkpatrick, *The Surprising New Power of Patents*, FORTUNE, June 23, 1986, at 57; *Work, Inventors’ Just Rewards*, U.S. NEWS & WORLD REPORT, Mar. 3, 1986, at 43.

chorus of criticism. Then and now, jurors were assumed incompetent to handle patent complexities,²⁰ and every losing party in a jury trial blamed the result, at least in part, on jury incompetence. Even more damning (from the jury opponent's perspective), jury decisions were hard for the Federal Circuit to overturn, a phenomenon that was partially blamed on the absence of a written opinion, which prevented identification of any particular flaw in the jury's chain of reasoning. On a broader front, the entire concept of juries in patent cases was deemed irrational; a steady drumbeat of criticism thus arose, all demanding that jurors be restrained.²¹ All challenges to juries in patent cases were ignored when the first Chief Judge, Howard Markey, administered the Federal Circuit; Judge Markey's 1989 retirement opened the door to changes, leading first to *In re Lockwood*,²² then to the revolution in *Markman*.

1. Incompetence and Unpredictability

The leading criticism of patent juries was (and is) that they simply lack the competence to effectively resolve matters that combined convoluted law, complex technology, and intricate facts.²³ Often without any data, commentators ridiculed patent

²⁰ A district judge once stated when participating in a panel discussion: "Honest to God, I don't see how you could try a patent matter to a jury. . . . It's like somebody hit you between your eyes with a four-by-four. It's factually so complicated." Symposium, *Judicial Panel Discussions on Science and the Law*, 25 CONN. L. REV. 1127, 1144 (1993) (comments of Alfred V. Covello, J.). See also JAFFE, *supra* note 9, at 195 (describing "the uncontroversial observation that the evidence in a patent case can be highly technical, and the average juror has little competence to understand and evaluate it").

²¹ E.g., Adelman *supra* note 15, at 1004–07.

²² 50 F.3d 966 (Fed. Cir. 1995), *vacated sub nom.* Am. Airlines, Inc. v. Lockwood, 515 U.S. 1182 (1995). *Lockwood* ruled that a Seventh Amendment right to a jury trial existed in declaratory judgment actions seeking patent invalidity, based upon a conclusion that a right to a jury decision on validity existed when validity was a defense to an infringement charge. *Id.* at 976. The Supreme Court vacated the Federal Circuit decision after the patent owner withdrew his jury demand.

²³ As early as 1971, litigants argued that "patent cases are too complicated and difficult for a jury to deal with." Tights, Inc. v. Stanley, 441 F.2d 336, 340

juries as irrational,²⁴ and derided the growing trend to demand a jury in every patent complaint. Simultaneously, jurors were deemed unwilling to exert the effort needed to dig into the complex law, facts and technology. Instead, jurors were assumed to be consumed by boredom in patent cases, such that they paid no attention at trial and thus were incapable of rendering a just verdict even if they had been competent.²⁵

Patent jurors were also deemed unpredictable.²⁶ Critics reasoned that, if jurors did not understand the case and did not pay attention to the testimony, surely they used a random, unfathomable process to reach a conclusion.²⁷ The public was thereby deprived of any ability to assess the breadth or validity of any given patent, and was without “notice” of the patent’s scope. These criticisms were frequently expressed by losing litigants, who were dismayed that any jury could have found the accused product to be within the asserted patent. And underlying the criticism was indignation at those jurors and lawyers who, untutored in the mysteries of patent esoterica, would nevertheless trespass on the domain of those specialists who had earned their place in the patent hierarchy by enduring years of study and training in the

(4th Cir. 1971), *cert. denied*, 404 U.S. 852 (1971). *See also* Ropski, *supra* note 7, at 632 (referring to “juror befuddlement and confusion”).

²⁴ *E.g.*, Ropski, *supra* note 7, at 632 (“[T]he jury’s lack of technological competence forces their potential decision to be the result of chance, not reasoned analysis of the evidence presented at trial.”).

²⁵ *See*, for example, the statements of a prominent New York practitioner, Albert Fey, who commented that “This stuff is even complicated for someone with a Ph.D. in engineering A jury’s eyes glaze over.” Bloomberg Business News, *Jury Cases on Patent Infringement on Trial*, CHICAGO TRIBUNE, June 12, 1995, at 2.

²⁶ Perhaps the leading criticism came in 1993 from a sitting judge on the Federal Circuit. *See* Paul R. Michel, *The Challenge Ahead: Increasing Predictability in Federal Circuit Jurisprudence for the New Century*, 43 AM. U. L. REV. 1231 (1993). Judge Michel described claim interpretation by jurors as a major source of unpredictability and called for construction by judges. *Id.* at 1238–39. Interestingly, Judge Michel described predictability as more important than fairness where economic rights were at stake. *Id.* at 1234.

²⁷ *E.g.*, Ropski, *supra* note 7, at 610 (noting that attorneys “may have been uneasy about placing important cases in the hands of fact-finders who might only guess at the correct decision, or base it upon considerations collateral to the facts in evidence”).

glories of patent intricacies.²⁸ The specialists were particularly affronted by trial lawyers who lacked the specialists' particularized expertise but who nevertheless proved adept at mesmerizing gullible jurors.

While a few practitioners relished the opportunity to practice before juries, patent juries were so roundly criticized that few challenged the accepted belief that patent cases would be fairer, and more predictable, if all decisions were made by legally trained and experienced judges.

2. The Unreviewable "Black Box"

Equally damning in the eyes of the critics was the inability to review the logic of jury decisions. Considered a "black box," jury verdicts were the result of an unknown process, hidden in the confines of the jury deliberation room. Worse, jury verdicts were upheld on appeal unless they were unsupported by substantial evidence. Losing litigants (who were often losing defendants) felt helpless on appeal, since they were unable to identify logical flaws in juror reasoning, and they faced a heavy burden in their attempts to overcome verdicts that had at least moderate evidentiary support. This was an especially egregious problem when juries decided the legal aspects of mixed questions of law and fact.

In contrast, judicial trial decisions require detailed findings of fact and conclusions of law, allowing appellate litigants to knowledgeably focus the appellate court on the trial judge's alleged errors. No assumptions need be made regarding what facts the trial judge accepted or rejected, and the judge's legal conclusions provide an exact map of the analysis leading to the judgment. While findings of fact are reviewed under the "clear error" standard, judicial conclusions of law are reviewed *de novo*, allowing losing defendants a second bite of the apple. The increasing damages awards in the 1980s and early 1990s added incentives for defendants who lost at trial to take any actions possible to reign in the jury scourge. Together, these factors

²⁸ *E.g., id.* at 613 (noting "the general attitude of the bar, including the judiciary, that the patentee's request for a jury trial is an indication that the patent is weak").

provided a steady pool of bitter opponents of patent juries.

3. The “Irrational” System

Juries in patent cases were also derided as fundamentally irrational. A priori, no rationally created legal system would place the ultimate decision in high-technology issues with material economic and social impact on a near random selection of ignorant, untrained, and even occasionally uneducated citizens. In the critics’ view, it would be hard to design a less logical approach to resolution of high-stakes technology disputes. The “it’s irrational” argument was rarely accompanied by reference to methodical research demonstrating the unsuitability of juries.²⁹ It was, instead, stated as an indisputable fact. The argument nevertheless helped fuel the groundswell of opposition to patent juries.

And it all seemed so unnecessary to jury critics. Acknowledging that the Seventh Amendment guaranteed a right to civil jury trials, critics nevertheless pointed to exceptions that, at least in their view, demonstrated that the Constitution did not grant a jury right in patent cases. This was most notable in the writing of Professor Adelman, who not only excoriated the use of juries, but vigorously argued that the Seventh Amendment did not apply—despite the support for juries expressed by the Federal Circuit.³⁰

²⁹ If juries do not decide issues, then they are decided by judges, and scholarly research exists suggesting that judges’ decisions suffer from many drawbacks that make it hard to characterize them as better decision makers than juries. *E.g.*, Jennifer K. Robbennolt, *Evaluating Juries by Comparison to Judges: A Benchmark for Judging?*, 32 FLA. ST. U. L. REV. 469 (2005). The article notes the “striking similarities in the decision making of judges and jurors,” and concludes that “judges and jurors generally appear to be influenced by similar factors and suffer from many of the same difficulties in making their decisions.” *Id.* at 509.

³⁰ Professor Adelman first criticized juries in a 1987 article, suggesting that “there is little room for juries in patent cases,” noting that judges have “greater intelligence and better training, coupled with the ability to control the pace of the trial and to study transcript and relevant documents outside the courtroom . . .” Adelman, *supra* note 15, at 979. He further characterized jury use as “unfortunate for the system’s integrity,” because of the “inherent irrationality of juries.” *Id.* at 1006. He reiterated that criticism in 1989 in an article on the

The battle lines were drawn, and it only remained to be seen whether the pro- or anti-jury forces would prevail.

C. Lockwood

The first skirmish occurred in *In re Lockwood*,³¹ a decision on rehearing after a Federal Circuit panel granted a petition for mandamus requiring a jury trial on validity. The panel concluded that the Seventh Amendment preserves the right to a jury trial “on factual questions relating to validity,”³² and extended the jury trial right to declaratory judgment actions for invalidity, even where infringement was no longer at issue.³³ The decision was consistent with past Federal Circuit support for juries, and the refusal of the full Federal Circuit to reconsider the issue en banc seemed a strong indication that the Federal Circuit would preserve a prominent role for patent juries.³⁴ The strength of that trend, however, was weakened by a ringing dissent by Judge Nies, joined by Chief Judge Archer and Judge Plager,³⁵ who used *Lockwood* to promote their belief that some patent issues could be taken from juries, even if juries could not be entirely banished from patent matters.

Judge Nies’s dissent identified three grounds for preventing juries from ruling on patent validity, based upon the importance of public rights, the lack of a declaratory judgment route to invalidity in English common law before adoption of the Constitution, and policy grounds that Judge Nies said favored judges over patent

doctrine of equivalents, suggesting that problems with the doctrine are “exacerbated when juries, whose members usually lack both technological and legal training.” Adelman, *The Doctrine of Equivalents in Patent Law: Questions that Pennwalt Did Not Answer*, 137 U. PA. L. REV. 673, 682 n.34 (1989). He continued his criticism after *Markman*, saying, for example, that “[n]o sane country would create a jury system for complex patent trials” Adelman, *Patent Claiming in the United States: Central, Peripheral, or Mongrel?*, 1 INTELL. PROP. THEORY 71, 73 (2010).

³¹ 50 F.3d 966 (Fed. Cir. 1995), *vacated sub nom.* American Airlines, Inc. v. Lockwood, 515 U.S. 1182 (1995).

³² *Id.* at 976.

³³ *Id.*

³⁴ See cases cited *supra* note 18.

³⁵ 50 F.3d at 980.

juries.³⁶ Of the three, the “public rights” argument became a key aspect of *Markman* and represented part of the foundation for *Markman*’s fact–law distinction. According to Judge Nies, “the denomination of an issue as one of law represents a policy decision that a judge is more appropriate than a jury to make the decision.”³⁷ She also lamented the “black box” of jury room decisions,³⁸ and noted that “only a reasoned decision lays the foundation for meaningful review.”³⁹ She ended by mourning the Federal Circuit precedent that “has been read to *require* jury resolution,” such that “litigants no longer challenge the propriety of giving the issue of validity to the jury.”⁴⁰ These strong words, coupled with the rejection of rehearing en banc, anticipated the sharp division of the Federal Circuit’s coming decisions on claim construction.

With that background, the stage was set for *Markman*.

II. *MARKMAN*

Markman arose from severe hostility to juries—as Judge Mayer said in his concurring opinion: “this is not just about claim language, it is about ejecting juries from infringement cases.”⁴¹ Most jury opponents wanted complete elimination of patent juries, but juries were so abhorred that any limitation of their role seemed a worthwhile goal. This dynamic played out in Federal Circuit jurisprudence. In a prophetic 1983 analysis of the Federal Circuit, Judge Posner of the Seventh Circuit predicted “deep ‘theoretical cleavages’ in patent theory over whether patents should be construed liberally to stimulate innovation or narrowly to decrease the monopoly power of a patent.”⁴² Posner’s prediction proved true

³⁶ *Id.* at 981.

³⁷ *Id.* at 990.

³⁸ *Id.*

³⁹ *Id.*

⁴⁰ *Id.*

⁴¹ *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 989 (Fed. Cir. 1995) (Mayer, J., concurring).

⁴² Richard A. Posner, *Will the Federal Courts of Appeals Survive Until 1984? An Essay on Delegation and Specialization of the Judicial Function*, 56 S. CAL. L. REV. 761, 777 (1983).

for the claim construction battle. Before Judge Markey's retirement, the Federal Circuit adhered to the belief that a significant jury role strengthened the patent system, and any desire among the Federal Circuit for jury limits was suppressed. A different view dominated after his retirement: "notice" of the scope of a patent became paramount. And since keeping patents narrow (and even of zero scope) provides more certainty of a patent's scope, the opposition to the broad interpretations often adopted by juries became a strong expression of the desire for greater notice.

Juror opponents between 1982 and 1995 thus argued multiple grounds to limit juries, most of which were not adopted.⁴³ But when the Federal Circuit lost the restraint imposed by Chief Judge Markey, the efforts to limit juries focused on the "fact-law" distinction, which contended that claim interpretation (among other issues) was a legal question reserved for judges.⁴⁴ That view has reasonable Supreme Court support,⁴⁵ but it begged the question of whether the ultimate legal determination of claim scope had underlying factual issues. To many, claim interpretation seemed a mixed question of law and fact (much like contractual interpretation), especially when claims were construed (as the courts had repeatedly demanded) from the perspective of one skilled in the art.⁴⁶ Undaunted, jury opponents declared that claim construction was *entirely* an issue of law, which would leave no fact-finding role for the jury. The Federal Circuit accepted the argument in *Markman*. The Supreme Court side-stepped the fact-

⁴³ The most notable limitations were imposed in *Jamesbury Corp. v. Litton Indus. Prod., Inc.*, 756 F.2d 1556, 1564-65 (Fed. Cir. 1985) (instructing on remand that the "court should instruct the jury on what the claim means"); *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 721 (Fed. Cir. 1984) (declaring that "claim interpretation [is] matter for the court to decide and to make known to the jury by its instructions"); and *Read Corp. v. Portec, Inc.*, 970 F.2d 816, 822 (Fed. Cir. 1992) ("Claim interpretation is a question of law for the court.").

⁴⁴ *E.g.*, *Read Corp. v. Portec, Inc.*, 970 F.2d 816, 822 (Fed. Cir. 1992).

⁴⁵ *E.g.*, *Winans v. Denmead*, 56 U.S. (15 How.) 330, 338 (1854) ("The first [question], what is the thing patented . . . [is] a question of law, to be determined by the court, construing the letters patent . . .").

⁴⁶ *E.g.*, *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005), *cert. denied*, 546 U.S. 1170 (2006).

law argument and simply ruled that no constitutional right existed to have juries interpret patent claims. And unintended consequences resulted, which to this day make up a central part of the uncertainties in patent interpretation.

A. The Federal Circuit Markman Decision

When looked at broadly, the Federal Circuit's *Markman* decision had a simple holding: "the interpretation and construction of patent claims, which define the scope of the patentee's rights under the patent, is a matter of law exclusively for the court."⁴⁷ That decision, while criticized,⁴⁸ was supported by precedent⁴⁹ and logic; much drama could have been averted if the Federal Circuit had left matters at that simple statement. Instead, the Federal Circuit added bold declarations of law and claim construction procedure that have bedeviled the patent system for two decades. Although the Federal Circuit's additional statements were intended to produce greater consistency and predictability in claim interpretation, some statements were based upon an unrealistic view of patent practice, and some bordered on fantasy.

The problems arose from the Court's desire to preclude any claim interpretation role for juries, and maximize the Federal Circuit's appellate review. The Federal Circuit rejected its previous rulings that were inconsistent with the view that "claim construction is strictly a question of law for the court."⁵⁰ It then focused its bold statements on the fact-law distinction,⁵¹ and only

⁴⁷ *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 967 (Fed. Cir. 1995).

⁴⁸ Circuit Judges Mayer and Rader concurred in the decision, and Circuit Judge Newman dissented. *Id.* at 968. Judge Mayer agreed with the outcome but disagreed with the rejection of juries. *Id.* at 989. Judge Newman disagreed with the rejection of juries and said remand was the proper action. *Id.* at 1026. Judge Rader agreed with the outcome and said that the court should not have addressed the role of the jury. *Id.* at 998-99.

⁴⁹ See *Winans*, 56 U.S. (15 How.) 330; see also *Read Corp.*, 970 F.2d 816.

⁵⁰ *Markman*, 52 F.3d at 977, 979.

⁵¹ *Id.* at 976 ("In this case which involves claim construction and a grant of JMOL of noninfringement based on claim construction, in order to determine whether that grant was correct, we must distinguish law from fact."). The

briefly mentioned public policies that supported exclusive judicial claim interpretation.⁵² It avoided entirely any argument based upon the so-called “complexity” exception to the Seventh Amendment. That fact–law analysis led to the Federal Circuit’s most problematic conclusion: the holding that “the construction given the claims is reviewed de novo on appeal.”⁵³

The Federal Circuit statements explaining claim construction in the new, jury-free environment were numerous and varied. Having concluded that claim construction was a pure issue of law, the Federal Circuit then addressed the impact on the claim construction process. Least controversial was the Federal Circuit’s conclusion that a district court is “obligated” to construe the patent and instruct the jury on its constructions.⁵⁴ This the district court had not done, but the Federal Circuit characterized the omission as “harmless error.”⁵⁵ The Federal Circuit did not explain why other district courts could not follow the same procedure: give the entire infringement question to the jury and then compare the verdict to a proper construction of the claims. Likely driven by the Federal Circuit’s desire to limit juries, the unexplained rejection removed an option from patent jury practice and mandated that every jury case have a *Markman* proceeding.

The Federal Circuit reiterated that the “focus” in claim construction is still on “the objective test of what one of ordinary skill in the art at the time of the invention would have understood the term to mean.”⁵⁶ This, of course, has been a bedrock claim

biggest precedential obstacle to this conclusion was *Bischoff v Wetherand*, 76 U.S. (9 Wall.) 812 (1869), which allowed the jury to determine “the character of the thing invented” in an invalidity issue. 52 F.3d at 988. The Federal Circuit simply punted on the issue, saying, “It is difficult, if not impossible, to discern any legal principle from *Bischoff* that related to claim construction in the context of patent infringement.” *Id.*

⁵² *Id.* at 978–79. The Federal Circuit also analogized claim construction to statutory interpretation, which it characterized as an entirely legal analysis. *Id.* at 987.

⁵³ *Id.* at 979.

⁵⁴ *Id.* at 981–82.

⁵⁵ The error was rendered harmless by the district court’s ruling on the post-trial motion. *Id.* at 982.

⁵⁶ *Id.* at 986.

interpretation principle since the creation of patent claims. Yet the principle posed an immediate problem for the new “fact free” claim interpretation, because determining what one of ordinary skill “understood” has always seemed a fact-intensive, evidentiary issue. Similarly, the court recognized the need for expert testimony to explain the technology to the district court. That testimony again seemed to have a distinctly factual character. Explaining how these two fundamental aspects of claim construction were consistent with the “entirely legal” conclusion led to *Markman*’s most controversial, and problematic, statements.

Markman began by noting the established distinction between “intrinsic” and “extrinsic” evidence.⁵⁷ It then embarked on a lengthy explanation of how extrinsic evidence may be received to construe claims, even conflicting evidence. But the Federal Circuit declared no factual issue ever arises from the procedure, even when the court accepts some evidence and rejects others. The result was a breathtaking declaration:

Through this process of construing claims by, among other things, using certain extrinsic evidence that the court finds helpful and rejecting other evidence as unhelpful, and resolving disputes *en route* to pronouncing the meaning of claim language as a matter of law based on the patent documents themselves, the court is *not* crediting certain evidence over other evidence or making factual findings.⁵⁸

While stated in all seriousness, the Federal Circuit would have been hard pressed to make a less logical proclamation. Despite the emphatic use of the word “not,” the process described above most certainly does involve “crediting certain evidence over other evidence,” and no stridency can change that reality. But the bizarre conclusion was needed (at least in the view of the Federal Circuit)

⁵⁷ *Id.* at 980. The Federal Circuit adopted the position that the prosecution history is part of the intrinsic evidence, *id.*, a conclusion that presumes no disputes will arise over the events during prosecution—a strange presumption given the frequency of patent allowances resulting from examiner interviews.

⁵⁸ *Id.* at 981.

to preserve de novo review, so it became part of claim construction law for the next two decades.

The same logic led the Federal Circuit to proclaim that a battle of the experts does not create issues of fact or change the de novo review standard:

When legal “experts” offer their conflicting view of how the patent should be construed, or where the legal expert’s view of how the patent should be construed conflicts with the patent document itself, such conflict does not create a question of fact nor can the expert opinion bind the court or relieve the court of its obligation to construe the claims according to the tenor of the patent.⁵⁹

Although stated in the context of a “legal” expert, the above principle applies to technical experts as well (testifying on the understanding of a “technician in the field, reading the patent, would understand the claims”⁶⁰), because their testimony is “extrinsic evidence” that may be accepted or rejected, depending on whether the court finds the evidence “helpful,” without creating an evidentiary issue that prevents de novo review.⁶¹

Having concluded that disputed evidence can be resolved without any fact finding, the Federal Circuit proceeded to declare inventor testimony irrelevant, at least testimony on the nature of the invention. Such testimony “is entitled to no deference,” even if it describes the understanding of one skilled in the art.⁶² The Federal Circuit made this pronouncement after citing—and quoting—a Supreme Court case crediting “the testimony of one of the patentees” as the “clearest exposition of the significance which the terms employed in the claims had for those skilled in the art.”⁶³ The Federal Circuit rejected the testimony by Mr. Markman on the understanding of one of ordinary skill, and added that, even if the

⁵⁹ *Id.* at 983.

⁶⁰ *Id.* at 981.

⁶¹ *Id.*

⁶² *Id.* at 983.

⁶³ *Id.* at 980 (quoting *United Carbon Co. v. Binney & Smith Co.*, 317 U.S. 228, 233 (1942)).

testimony were true, it would not “dissuade us from our legal construction of the claim based on the patent and prosecution history”⁶⁴ To ensure no inventor testimony could be credited, the Federal Circuit added that an inventor’s intent “is of little or no probative weight in determining the scope of the claim”⁶⁵

The Federal Circuit also proclaimed that “extrinsic evidence of record cannot be relied upon to change the meaning of the claims.”⁶⁶ In so doing, *Markman* presaged the decision in *Phillips*,⁶⁷ which established the specification as the primary source of claim interpretation, such that extrinsic evidence could not be used to modify a meaning that was apparent from reviewing just the patent and its prosecution history.⁶⁸ Inventor and expert testimony, previously a central facet of claim interpretation, immediately became secondary to semantic fencing over the use of words in the text and prosecution history.⁶⁹ How and when extrinsic evidence could be used when the word’s meaning was not apparent became a crucial focus of claim construction arguments, with parties arguing over whether the evidence helped understand the disputed terms, or instead, improperly sought to change a meaning apparent from the specification.

The Federal Circuit bolstered its *Markman* opinion by explaining various propositions that ranged from naive assertions to outright fantasy. Quoting a treatise from 1890, the Federal Circuit praised the goal of obtaining “a permanent and universal

⁶⁴ *Id.* at 983.

⁶⁵ *Id.* at 985. The Federal Circuit added an exception, saying that the inventor’s intent “as documented in the prosecution history” was entitled to weight. *Id.* The court did not explain why one expression of inventor’s intent was relevant and another not, but the distinction was presumably based upon the availability of the prosecution history to the public.

⁶⁶ *Id.* at 983. This contention is despite the later declaration that “[t]here is no parole evidence rule in patent law for obvious reasons.” *Id.* at 985.

⁶⁷ *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005), *cert. denied*, 546 U.S. 1170 (2006).

⁶⁸ *Id.* at 1311–24.

⁶⁹ Before *Markman*, “semantic antics” were roundly condemned by the Federal Circuit. *E.g.*, *Senmed, Inc. v. Richard–Allan Med. Indus., Inc.*, 888 F.2d 815, 819 (Fed. Cir. 1989) (citing *Burlington Indus., Inc. v. Dayco Corp.*, 849 F.2d 1418, 1421–22 (Fed. Cir. 1988)).

definition of [the inventor's] rights under the patent.”⁷⁰ While a laudable goal, no experienced practitioner would ever expect any claim interpretation in a lawsuit to have “universal” application, because each new infringer has different products that produce different claim construction issues, and a claim construction is only “permanent” if adopted by all subsequent courts. Nevertheless, the desire for “permanent and universal” constructions inspired the Federal Circuit’s relentless cleaving to de novo review. Similarly, the Federal Circuit reiterated the view that the prosecution history represented an “undisputed public record,”⁷¹ despite occasional disputes in patent cases regarding what happened during an examiner interview.

Perhaps most astonishing was the remarkable assertion that “there should be no ‘ambiguity’ in claim language to one of ordinary skill in the art that would require resort to evidence outside the specification and prosecution history.”⁷² According to the Federal Circuit, compliance with the “particularly pointing out and distinctly claiming” requirement of § 112 of the patent statute⁷³ precludes ambiguity: “[i]f the patent’s claims are sufficiently unambiguous for the PTO, there should exist no factual ambiguity when those same claims are later construed by a court of law in an infringement action.”⁷⁴ This extraordinary declaration thus means, according to the Federal Circuit, that extrinsic evidence cannot be used “for the purpose of clarifying ambiguity in claim terminology.” Twenty years later, precisely that kind of ambiguity caused the Supreme Court to overturn *Markman*’s de novo review standard.⁷⁵ Until then, courts and litigants struggled with how to explain obvious ambiguities in claim language that the

⁷⁰ *Id.* at 979 (quoting WILLIAM C. ROBINSON, *THE LAW OF PATENTS FOR USEFUL INVENTIONS* § 733, at 483–84 (1890)).

⁷¹ *Id.* at 980. That view did not originate with *Markman*, but has long been part of patent lore. *See, e.g., Senmed*, 888 F.2d at 819 n.8.

⁷² *Markman v. Westview Instruments*, 52 F.3d 967, 986 (Fed. Cir. 1995).

⁷³ 35 U.S.C. § 112 (West 2014).

⁷⁴ *Markman*, 52 F.3d at 986.

⁷⁵ *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 836 (2015). The phrase “molecular weight” has three meanings: “peak average molecular weight,” “number average molecular weight,” and “weight average molecular weight”.

Federal Circuit said should not exist.

B. The Markman Concurring and Dissenting Opinions

The concurring and dissenting opinions in *Markman* provided a striking counterpoint to the reasoning of the majority. Although Judge Mayer's concurrence agreed with the ultimate outcome⁷⁶ and Judge Newman's dissent did not,⁷⁷ they both excoriated the majority for its reliance on the fact–law distinction to remove juries from claim construction and for adopting the de novo review standard. In so doing, they identified the issues that would dominate *Markman* proceedings over the ensuing two decades. Judge Newman was particularly instructive. Although her opinions have been unjustly dismissed as misguided reveries, her dissent in *Markman*, along with Judge Mayer's concurrence, provided a concise roadmap of the Federal Circuit struggles to come.

The issues raised by Judges Mayer and Newman were legion: Factual issues exist regarding the prior art,⁷⁸ and the “meaning . . . of an event during prosecution.”⁷⁹ In resolving disputes over terms, “the trier of fact often makes findings that depend on the weight, credibility, and probative value of conflicting evidence”⁸⁰ And “the meaning and scope of disputed technologic and other terms or art in particular usage are classical questions of fact.”⁸¹ A court of appeals is not a trial court, because “[a]ppellate briefs and fifteen minutes per side of attorney argument are not designed for de novo findings of disputed technologic questions.”⁸² While claim interpretation is ultimately a question of law, underlying factual

⁷⁶ *Markman*, 52 F.3d at 998–99 (Mayer, J., concurring).

⁷⁷ *Id.* at 1026 (Newman, J., dissenting). Judge Newman would have remanded to the district court to apply the substantial evidence standard to review of the jury verdict. *Id.*

⁷⁸ *Id.* at 991 (Mayer, J., concurring).

⁷⁹ *Id.* at 991 (Mayer, J., concurring), 1004 (Newman, J., dissenting) (citing *Smithkline Diagnostics, Inc. v. Helena Lab. Corp.*, 859 F.2d 878, 882 (Fed. Cir. 1988)).

⁸⁰ *Id.* at 999 (Newman, J., dissenting).

⁸¹ *Id.*

⁸² *Id.*

issues still exist.⁸³ And most significantly, “[w]hen the extrinsic evidence is in conflict—as it invariably is—what then? Will the Federal Circuit itself weigh the evidence of expert witnesses?”⁸⁴ Each of these, and more, became the stuff of endless argument following *Markman*.

Judges Mayer and Newman also anticipated the *Markman* hearing, a procedure without any counterpart in the rest of jurisprudence: “The majority’s elimination of . . . the deference owed to the judge . . . distorts the trial/appellate relationship in a manner unique to patent litigation”⁸⁵ As Judge Mayer declared, *Markman* “represents a secession from the mainstream of law.”⁸⁶ Nowhere else would parties fight for months over the eventual jury instructions, sometimes with evidentiary hearings, sometimes with expert reports, sometimes with depositions and other discovery. *Markman* transformed patent litigators into hyper specialists, devoting astonishing efforts to quibbles over both common and uncommon words, following ever-changing procedures in pursuit of the ever-elusive predictability and certainty.

C. The Supreme Court Affirmance

After the *sturm und drang* at the Federal Circuit, the Supreme Court’s review was anticlimactic. In a short, unanimous opinion, the Supreme Court ruled that “the construction of a patent, including terms of art within its claims, is exclusively within the province of the court.”⁸⁷ The Court side-stepped the fact–law issue. It concluded that the evidence was insufficient to show a practice analogous to claim interpretation was accomplished by juries before the adoption of the Constitution.⁸⁸ It found no binding Supreme Court precedent requiring construction of patent claims

⁸³ *Id.* at 1000–02.

⁸⁴ *Id.* at 1006, 1008.

⁸⁵ *Id.* at 1008.

⁸⁶ *Id.* at 989 (Mayer, J., concurring).

⁸⁷ *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 372 (1996).

⁸⁸ *Id.* at 377–83.

by juries, and then decided the case on policy grounds.⁸⁹ Judges were better suited to the task of claim interpretation and were more likely to benefit the public by providing “uniformity in the treatment of a given patent.”⁹⁰ The issue of de novo review was ignored, as were the Federal Circuit’s contortions of claim construction practice to preserve that review. Juries were out, judges would henceforth evaluate the meaning of claims, and the patent world embarked on a new, and uncertain, whirlwind of evolving semantic struggles.

III. THE EARLY FALL-OUT FROM *MARKMAN*

Like all dramatic changes in the law, *Markman* produced immediate questions about what to do and how to do it. Judges must construe the claims and instruct the jury on their meaning, that much was clear. But when? How? What evidence, if any, should be considered? What procedural rules should be followed? District courts and litigants struggled to answer these and many similar issues. And they learned, to their dismay, that despite their best efforts, the de novo review by the Federal Circuit rendered their decisions irrelevant and the ultimate outcome less predictable. Two immediate issues were faced: when should the district court construe the claims and what evidence should the court review?

A. Hearings and When to Hold Them

After *Markman*, district courts had to decide the procedures for construing claims. No precedent existed, so district courts had to create the rules from scratch, adopting new procedures as they gained experience.⁹¹ Even fundamental questions such as whether the claims should be construed after a hearing or simply on written briefs had never been answered. District courts thus tried every

⁸⁹ *Id.* at 384–90.

⁹⁰ *Id.* at 390.

⁹¹ District courts were quick to note that *Markman* “provided no procedural guidance for the nature of proceedings for a pretrial construction of claims.” *Chad Indus., Inc. v. Automation Tooling Sys., Inc.*, 938 F. Supp. 601, 603 (C.D. Cal. 1996).

approach, and early *Markman* proceedings ranged from long evidentiary hearings, to attorney arguments, to written submissions.

The most significant question soon became when to hold the hearings. Under *Markman*'s limited guidance, the claims could be construed any time before the jury began its deliberations: before discovery, during discovery but before expert reports, after expert reports, while deciding a summary judgment motion, at the pre-trial conference, or during or even after trial.⁹² Defendants, often convinced that the case would disappear as soon as the claims were construed, sought claim construction at the earliest opportunity. Defendants saw no reason to engage in discovery and motion practice when, in their view, a simple determination of claim meaning would demonstrate non-infringement. But early *Markman* proceedings carry risks for judges, who care more for judicial efficiency than the preferences of litigants. Judges soon realized that early decisions carried a “whack-a-mole” risk,⁹³ where resolution of the early claim construction issues led to other claim construction issues as the case became more refined.

Claim construction proceedings held early usually occurred before the expert opinions were formed, which sometimes deprived the court of expert assistance in claim construction. And judges found that they were more comfortable with the case and its technology at later stages of the case, when the overall infringement and validity issues were refined. Judges experimented with claim construction at a variety of different times, and even today, the timing of *Markman* hearings varies widely from district to district and from judge to judge within each district.⁹⁴ The

⁹² *E.g.*, *Elf Atochem N. Am., Inc. v. Libby–Owens–Ford Co.*, 894 F. Supp. 844, 850 (D. Del. 1995). Construction after trial has the advantage of providing the judge all possible evidence, but posed its own problems, due to the delay required to construe the claims. *See Lucas Aerospace, Ltd. v. Unison Indus. L.P.*, 890 F. Supp. 329, 332 n.3 (D. Del. 1995).

⁹³ “[O]nce you do claim construction, people start coming up with new theories and new approaches.” Delaware Bar Foundation, *Patent Litigation in the District of Delaware: The Judge’s Perspective*, 18 DEL. LAWYER 6, 7–8 (2000) (comments by McKelvie, J.).

⁹⁴ *E.g.*, *id.* (District of Delaware judges discussing their options for conduct of a *Markman* hearing).

adoption of local patent rules, starting with the Northern District of California, provided some uniformity within districts by putting normal claim construction after mandatory disclosure of infringement and validity contentions, but great variety still exists between districts, and judges are free, even in districts with local rules, to schedule the *Markman* hearing as late in the process as they desire. That variation encourages forum shopping as plaintiffs seek the most advantageous timing (usually later in the case), and the variety created great cost uncertainty, especially for defendants.

B. What Can the Court Review?

The problem of when to conduct *Markman* hearings pales in comparison to the issues surrounding what evidence the district court can consider. The Federal Circuit's guidance was less than Delphic, and the Supreme Court did nothing to resolve the uncertainty. Compounding the problem, the Federal Circuit's proposition that no credibility determinations result from reviewing competing expert testimony produced immediate consternation among the judiciary.⁹⁵ Expert testimony could be taken, and indeed, seemed necessary to understand some patents, but its proper weight was obscure. Use of non-patent documents to aid the process was equally uncertain. How was the prior art to be used, if at all? Were dictionaries, which were "extrinsic" to the patent and prosecution history, now to be disregarded, or merely given less weight? Should a technical treatise or a technical article be considered, and if so for what purpose? And if consulted, how much weight should be given? The inventor's testimony was of little or no weight, according to *Markman*, but did that also apply to admissions by the inventor? In the world created by *Markman*, where incomprehensible patents nevertheless had "no ambiguity" and the extrinsic evidence "cannot be relied upon to change the meaning of the claims," discerning the understanding of a person skilled in the art became a daunting prospect.

⁹⁵ *E.g.*, *Lucas Aerospace*, 890 F. Supp. at 333 n.7 (Schwartz, J.) ("But when the Federal Circuit Court of Appeals states that the trial court does not do something that the trial court does and must do to perform the judicial function, that court knowingly enters a land of sophistry and fiction.").

The Federal Circuit attempted to resolve these issues a year after *Markman* in *Vitronics Corp. v. Conception, Inc.*⁹⁶ Rather than clarifying the process, *Vitronics* created a mythical world that compounded the uncertainty. Intended to clarify the step-by-step process courts should use to construe claims, *Vitronics* instead presented district courts with a nearly insurmountable task: they must understand and construe eccentric jargon describing esoteric technology, while using experts to help them understand that technology but not the patent's claims.

Vitronics began by establishing a hierarchy. Patents are construed by first looking only at the intrinsic evidence. The process begins by looking at the word of the claims,⁹⁷ which are to be given their “ordinary and customary meaning.”⁹⁸ The specification is then reviewed, followed by the prosecution history.⁹⁹ Then the Federal Circuit indulged in a fantasy. “In most situations, an analysis of the intrinsic evidence alone will resolve any ambiguity in a disputed claim term.”¹⁰⁰ Perhaps this approach makes sense for patents involving simple technology, but the idea is absurd for much of the modern technology described in patents. One can rarely say that “disputed” terms have no ambiguity to a judge when those terms are used in patents involving complex chemistry, semiconductors, software, or any of a host of subtly complex subjects. *Vitronics* nevertheless declared such clarity the norm and proceeded to narrowly proscribe use of experts to explain the disputed terms, except in rare circumstances.¹⁰¹

Assuredly, experts could be consulted.¹⁰² But such extrinsic evidence generally, and experts in particular, could normally be

⁹⁶ 90 F.3d 1576 (Fed. Cir. 1996).

⁹⁷ *Id.* at 1582.

⁹⁸ *Id.* *Vitronics* made no attempt to explain how the court was to divine the “ordinary and customary” meaning of technical terms that are outside the court’s normal understanding.

⁹⁹ *Id.*

¹⁰⁰ *Id.* at 1583.

¹⁰¹ The goal was to provide public notice so that competitors could “review the public record, apply the established rules of claim construction, ascertain the scope of the patentees claimed invention and, thus, design around the claimed invention.” *Id.*

¹⁰² *Id.* at 1584.

consulted to only “help the court come to the proper understanding of the claims”—it could not be used “to vary or contradict the claim language.”¹⁰³ How the judge was to know that the expert, describing medicinal chemistry, was contradicting the claim language was never described. Instead, the district courts were left to perform metaphysical gymnastics: they could let the expert explain the technology of the patent but not the words used in the patent to describe the technology.¹⁰⁴ Experts could not be used to “vary claim terms” even from how they were “implicitly” defined in the specification.¹⁰⁵

Vitronics did provide some clarity. It explained that prior art could be considered as well as dictionaries.¹⁰⁶ The importance of the specification was emphasized.¹⁰⁷ Inventor testimony on claim meaning was again condemned.¹⁰⁸ And the sequence of analysis was clearly identified. Yet the process was impossible for any technology unfamiliar to the judge, and the result was growing confusion.

IV. DE NOVO REVIEW REVISITED

Markman ruled that a district court’s claim construction decision would be reviewed de novo on appeal, based upon the contention that claim construction involved no fact issues. The Supreme Court avoided directly addressing the question, which appeared to leave the de novo review standard intact. Yet the Supreme Court’s decision hinted that claim interpretation was a mixed question of law and fact,¹⁰⁹ thereby producing decisions by

¹⁰³ *Id.*

¹⁰⁴ Judge Rader subsequently commented that “[a]s a matter of logic, this instruction is difficult to grasp.” *Cybor Corp. v. FAS Tech., Inc.*, 138 F.3d 1448, 1474 (Fed. Cir. 1998) (Rader, J., dissenting).

¹⁰⁵ *Vitronics*, 90 F.3d at 1583–84.

¹⁰⁶ *Id.* at 1584.

¹⁰⁷ *Id.*

¹⁰⁸ *Id.*

¹⁰⁹ The Supreme Court in *Markman* hinted that claim construction was a “mongrel practice,” *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 378 (1996), and that it fell “somewhere between a pristine legal standard and simple historical fact,” *id.* at 388.

various Federal Circuit panels applying the “clearly erroneous” standard to factual aspects of claim interpretation.¹¹⁰ The issue then was addressed in *Cybor Corp. v. FAS Tech., Inc.*,¹¹¹ two years after *Vitronics*, and three years after *Markman*.

A. Cybor

Demonstrating the sharp division that would characterize Federal Circuit attempts to grapple with the *Markman–Vitronics* process, *Cybor* produced six opinions: an opinion by the majority joined by eight judges; separate concurring opinions by Judges Plager, Bryson, and Chief Judge Mayer; a dissent by Judge Rader; and additional views by Judge Newman.¹¹² The *Cybor* majority reaffirmed the de novo review standard, locking into place the foundation for much future angst. Rejecting the suggestion that the Supreme Court’s *Markman* decision supports claim construction as a legal issue with some underlying factual determinations,¹¹³ the *Cybor* majority resolutely declared that “nothing” from the Supreme Court’s decision supports the view “that claim construction may involve subsidiary or underlying questions of fact.”¹¹⁴ Compounding the difficulty, *Cybor* rejected the suggestion that “there should be deference to what are asserted to be factual underpinnings of claim construction,”¹¹⁵ a conclusion that was immediately undermined by Judge Plager’s view that “common sense dictates that the trial judge’s view will carry

¹¹⁰ *E.g.*, *Eastman Kodak Co. v. Goodyear Tire & Rubber Co.*, 114 F.3d 1547, 1555–56 (Fed. Cir. 1997); *Wiener v. NEC Elecs. Inc.*, 102 F.3d 534, 539 (Fed. Cir. 1996); *Metaulics Sys. Co. v. Cooper*, 100 F.3d 938, 939 (Fed. Cir. 1996).

¹¹¹ 138 F.3d 1448 (Fed. Cir. 1998).

¹¹² *Id.*

¹¹³ *Id.* at 1455.

¹¹⁴ *Id.* Ignoring entirely the concept of judicial restraint, the majority declared that the Supreme Court must have concluded that no factual issues arise in claim construction, else “surely the Supreme Court would have discussed whether subsidiary or underlying fact questions should be decided by the judge or the jury.” *Id.* at 1455 n.5.

¹¹⁵ *Id.* at 1455–56.

weight.”¹¹⁶ Judge Bryson compounded the uncertainties by declaring that, when “claim construction would turn on an issue such as a credibility judgment between two competing expert witnesses,”¹¹⁷ *de novo* review still allows the appellate court “to factor into our legal analysis the district court’s superior access to one of the pertinent tools.”¹¹⁸ The battle lines were now drawn for a long struggle that would continue for the next seventeen years.

Cybor also presaged the difficulties in finding “ordinary and customary” meaning in common terms, since *Cybor* raised a significant dispute over the meaning of the word “to,”¹¹⁹ and the phrase “or both.”¹²⁰ When simple, not technical terms such as “to” and “or both” are the focus of district court and appellate argument, the entire concept of “plain meaning” or “ordinary meaning” becomes suspect. Yet that concept remains a bedrock of claim construction law, adding great uncertainty to how disputes over such terms will eventually be resolved.

The *Cybor* majority was excoriated in Chief Judge Mayer’s concurrence, Judge Rader’s dissent, and Judge Newman’s additional views. Each focused on the difficulty of applying the *de novo* review standard under the *Markman* process. Chief Judge Mayer declared that the majority’s adherence to *de novo* review “profoundly misapprehends” the Supreme Court’s *Markman* decision.¹²¹ Judge Rader criticized the lack of deference to the trial “main event”¹²² and lamented the Federal Circuit’s inability to reconcile the denigration of expert testimony with the principle that claim meaning is viewed in the eyes of one of ordinary skill in the art with: “What then defeats the relevance of the testimony of one of skill in that art at the time of the invention?”¹²³ He noted the high reversal rate appearing in Federal Circuit cases and declared that the *Markman* process “provides no early certainty at all, but

¹¹⁶ *Id.* at 1462 (Plager, J., concurring).

¹¹⁷ *Id.* at 1463 (Bryson, J., concurring).

¹¹⁸ *Id.*

¹¹⁹ *Id.* at 1458–59. “To” was also discussed in Chief Judge Mayer’s concurring opinion. *Id.* at 1469, 1472.

¹²⁰ *Id.* at 1469, 1472 (Mayer, C.J., concurring).

¹²¹ *Id.* at 1463.

¹²² *Id.* at 1473.

¹²³ *Id.* at 1475.

only opens the bidding.”¹²⁴ Judge Newman agreed, noting the objective of “greater stability” thereby “enhancing consistency” “had not been well achieved.”¹²⁵ She described the resulting “unpredictability”¹²⁶ of *Markman*, and how the Federal Circuit process will “confound rather than ease the litigation process.”¹²⁷ All of these comments would be repeated over the decades, as the Federal Circuit continued to cling to de novo review in the face of ever increasing criticism.

The issues of de novo review and deference to the district court would continue to dog the Federal Circuit, and the issue is alive even now. Those issues were debated but not resolved in *Phillips*,¹²⁸ the 2005 decision that has dominated claim construction for the last decade. De novo review remained the law after *Phillips*, despite even more strident criticism.¹²⁹ They were again the focus in 2014, when the Federal Circuit decided *Lighting Ballast*,¹³⁰ and again reaffirmed de novo review.¹³¹ Only in 2015

¹²⁴ *Id.* at 1476.

¹²⁵ *Id.* at 1478 (Newman, J., additional views).

¹²⁶ *Id.* at 1479.

¹²⁷ *Id.* at 1480.

¹²⁸ *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005). The Federal Circuit invited amicus briefs on a number of claim construction issues, including whether “[it is] appropriate for this court to accord any deference to any aspect of trial court claim construction rulings.” *Id.* at 1328. The Federal Circuit majority opinion did not debate the question but instead merely embraced *Vitronics. Id.*

¹²⁹ Chief Judge Mayer’s criticism of the majority was scathing. He referred to the “absurdity” of “adhering to the falsehood that claim construction is devoid of any factual component.” *Phillips*, 415 F.3d at 1330. He described the result of the Federal Circuit’s standard as “mayhem” that “seriously undermined the legitimacy of the process, if not the integrity of the institution.” *Id.* He described the Federal Circuit’s claim construction decisions as a “black hole,” *id.*, and said “the court flails about in an attempt to solve the claim construction ‘conundrum.’” *Id.* at 1334. His conclusion was disdainful: “The court’s opinion today is akin to rearranging the deck chairs on the Titanic—the orchestra is playing as if nothing is amiss, but the ship is still heading for Davey Jones’ locker.” *Id.* at 1334–35.

¹³⁰ *Lighting Ballast Control LLC v. Philips Elec. N. Am. Corp.*, 744 F.3d 1272, 1282–84 (Fed. Cir. 2014) (reaffirming the de novo review standard, this time on the basis of stare decisis so that “settled expectations” should not be disrupted).

did the Supreme Court finally correct the Federal Circuit and direct what should have been plain all along: claim construction has factual components that must be reviewed under Rule 52's "clear error" standard.¹³² In the meantime, much damage was done, and the Federal Circuit suffered continuing disdain for its stubborn assertion of the impossible.

B. The Reversal Rate: Growing Criticism

Markman was decided in the hope that claim construction conducted solely by judges would make patent law more certain and predictable. Alas, that was not to be, as the reversal rates by the Federal Circuit began to demonstrate.¹³³ Criticism of the Federal Circuit's rate of reversal became a continuing feature of the Federal Circuit's *Markman* jurisprudence.¹³⁴ The criticism, from judges, practitioners, and scholars, attacked Federal Circuit jurisprudence as confusing and often attributed that confusion to the de novo review standard. Thus, for example, the National Law Journal describes the reversal rate of claim construction as having "so enraged the bench that one federal judge—Samuel Kent of Galveston, Texas—has dismissed the appeals court as 'little green men wearing propeller hats who don't know Tuesday from Philadelphia.'" ¹³⁵

A careful study of the reversal rate on claim construction¹³⁶ revealed that reversal was indeed a problem, despite occasional

¹³¹ *Id.*

¹³² Teva Pharm. USA, Inc. v. Sandoz, Inc., 135 S. Ct. 831, 833 (2015).

¹³³ As early as 1998, Judge Rader noted in *Cybor* that fifty-three percent of patent cases were reversed by the Federal Circuit, in whole or in part. *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1476 (Rader, J., dissenting).

¹³⁴ See, e.g., Kimberly A. Moore, *Markman Eight Years Later: Is Claim Construction More Predictable?*, 9 LEWIS & CLARK L. REV. 231, 245–46 (2005). The author, who would eventually be appointed to the Federal Circuit, concluded that *Markman* created confusion and the reversal rate was getting worse.

¹³⁵ Victoria Slind-Flor, *Formerly Obscure Court is in Spotlight: Importance of New Technology Makes Its Decisions Big News*, NAT'L L.J., Apr. 30, 2001 at B9, B12.

¹³⁶ Moore, *supra* note 134.

denials by Federal Circuit judges. Conducted by Professor Moore (later Federal Circuit Judge Moore), the study concluded that the claim construction reversal rate in appeals from 1996 through 2003 was 34.5%.¹³⁷ Professor Moore further concluded that, after declining from 1996 through 1998 to 20%, the reversal rate increased to nearly 40% by 2003.¹³⁸ From this, Professor Moore blamed de novo review for at least part of the increase, and concluded that “district court judges are not able to resolve claim construction issues as the Federal Circuit judges would like.”¹³⁹ Others reached similar conclusions.¹⁴⁰

Professor Moore also concluded that the Federal Circuit “is not providing sufficient guidance on claim construction,”¹⁴¹ a view that echoed the more vigorous criticism from the bar and other scholars. Thus, for example, the Chair of the ABA Section of Intellectual Property Law criticized the Federal Circuit’s “morass of confused and contradictory claim construction canons.”¹⁴² A practitioner stated “what is certain is that uncertainty reigns supreme in trying to prognosticate how the CAFC will resolve” issues.¹⁴³ Another commented that “[i]t comes as little surprise that some trial judges have grown apathetic to the process, and that nearly all litigants unhappy with the outcome of their cases will

¹³⁷ *Id.* at 233.

¹³⁸ *Id.* at 246.

¹³⁹ *Id.*

¹⁴⁰ *E.g.*, Michael A. O’Shea, *A Changing Role for the Markman Hearing: In Light of Festo IX, Markman Hearings Could Become M-F-G Hearings Which are Longer, More Complex and Ripe for Appeal*, 37 CREIGHTON L. REV. 843 (2004); Victoria Slind-Flor, *Markman Precedent Holds Up Patents: Ruling Intended to Add Predictability and Speed Fails to Do So*, NAT’L L.J., Jan. 15, 2001 at A1, A12.

¹⁴¹ Moore, *supra* note 139, at 247.

¹⁴² Mark T. Banner, *Keeping Current with the Chair*, 21 ABA SEC. OF INTELLECTUAL PROP. LAW NEWSLETTER, no. 4, Summer 2003, at 14, *available at*

http://www.americanbar.org/content/dam/aba/publishing/ipl_newsletter/intelprop_bulletin_summer_03.authcheckdam.pdf.

¹⁴³ George J. Awad & George A. Frank, *Federal Circuit Construction Project: Hard Hats Required*, LEGAL INTELLIGENCER, Aug. 25, 2004, at 5, *available at* <http://www.thelegalintelligencer.com/id=900005413766/Federal-Circuit-Construction-Project-Hard-Hats-Required?slreturn=20150329080006>.

appeal and include a claim construction issue.”¹⁴⁴ Still another criticized Federal Circuit “hyperactivity,” and argued that the Federal Circuit was engaged in “appellate fact finding.”¹⁴⁵ Something had definitively gone amiss in the Federal Circuit’s plan to produce greater predictability and clarity.

V. NEVER-ENDING PROBLEMS

The problem of de novo review dominated issues after *Markman*, but it was by no means the only issue to arise. When claim construction was removed from the jury’s black box and subjected to scrutiny in the harsh light of written judicial opinions, the carefully constructed procedure of *Markman*, *Vitronics*, *Cybor*, and *Phillips* displayed numerous intractable flaws. Some flaws were a necessary result from *Markman*, while others followed from the inability of the Federal Circuit to articulate coherent or practical claim construction rules. Some were eventually resolved by the Federal Circuit, and some remain even today.

A. *Whack-a-Mole: The Unforeseen Problem of Iterative Processes*

A little understood aspect of *Markman* produced a crucial but rarely recognized problem. Claim construction is inherently an iterative process, involving not just the intrinsic and extrinsic evidence but complex interactions between the plaintiff’s theory of infringement and the defendant’s theory of invalidity. Defendants select their prior art based in part on their objective view of the patent’s proper scope, but also based upon the scope of the patent implied by the plaintiff’s infringement contentions; broader contentions capture more prior art, and the canons of claim construction declare that the prior art helps inform the meaning of

¹⁴⁴ Anthony R. Zeuli & Rachel Clark Hugley, *Avoiding Patent Claim Construction Errors: Determining the Ordinary and Customary Meaning Before Reading the Written Description*, FED. LAWYER, June 2004, at 29–30, available at <http://www.merchantgould.com/portalsresource/1262.pdf>.

¹⁴⁵ William C. Rooklidge & Mathew F. Weil, *Judicial Hyperactivity: The Federal Circuit’s Discomfort with Its Appellate Role*, 15 BERKELEY TECH. L.J. 725, 729–30 (2000).

the claim terms.¹⁴⁶ The natural result is that a change in the plaintiff's infringement theory (and accordingly the plaintiff's claim construction theory) produces a change in the defendant's claim construction arguments. Similarly, when the defendant identifies prior art, the plaintiff inevitably seeks to modify its claim construction to avoid the prior art but still cover the accused product. Plaintiffs and defendants both frequently fail to fully understand how their opponent is truly characterizing claim terms until the process has progressed, and often not until after extensive briefing. The result is a series of iterations, with the parties repeatedly jostling as their opponent's assertions are clarified and modified. This iterative process is integrally part of claim interpretation.

The problem becomes more acute when, as is usually the case, the district court construes the terms by accepting part of each side's argument. The parties then scramble to adjust their contentions. The defendant searches for new art covered by the unforeseen interpretation of the court, setting off a counter argument by the plaintiff, who looks to change other aspects of the claim interpretation to make the new construction consistent with the plaintiff's infringement theory. When extrinsic evidence is involved (as is frequently the case), the parties need to revisit their extrinsic discovery. This is the "whack-a-mole" problem, first described by Judge McKelvie of the District of Delaware,¹⁴⁷ and later detailed by Judge Rader in his *Cybor* dissent.¹⁴⁸ Worse, district judges sometimes do not recognize the implications of their construction until they hear trial arguments and testimony, at which point they might need to change the construction mid-trial,

¹⁴⁶ *Vitronics Corp. v. Conception, Inc.*, 90 F.3d 1576, 1584 (Fed. Cir. 1996).

¹⁴⁷ Delaware Bar Foundation, *supra* note 93.

¹⁴⁸ "As soon as the trial court issues a claim interpretation, both sides often seek to shift their original claim interpretations to accommodate the judge's views. Thus, the parties seek to revise expert reports or reopen discovery to account for the Judge's interpretation. . . . As a result of the new and perhaps somewhat unexpected interpretation, the parties scramble to create and acquire new evidence for their infringement arguments." *Cybor Corp. v. FAS Technologies, Inc.*, 138 F.3d 1448, 1474 n.2.

with potentially unfortunate consequences.¹⁴⁹

The problem did not exist before *Markman*. When juries construed the claims as part of their infringement analysis, they did so in a single proceeding (the trial). Each side presented a coherent theory. The plaintiff described how their theory of infringement, including their theory of how the claim terms were interpreted, both demonstrated infringement and preserved the patent's validity. Defendants likewise presented an internally consistent theory explaining how the correct interpretation of the patent showed either non-infringement or invalidity (or perhaps both). Some iterations occurred during the give-and-take at trial, but all interwoven issues were hashed out in the all-encompassing discussions in the jury room, which led to a decision that one side was right and the other wrong.

Temporally distancing the first step of the infringement analysis (claim interpretation) from both the second step (comparison of the claims to the accused product) and the validity analysis necessarily produced an overwhelming demand for further iterations. *Markman* led to endless battles that consisted of attempts by the plaintiff to maintain infringement theory flexibility throughout the process and matching attempts by the defendant to lock the plaintiff into an early and unchanging construction. Plaintiffs similarly sought to prevent any shifts of the defendant's invalidity theories, especially after the trial court construed the claims. Some local rules accommodated this jostling, but some did not, and in districts without local rules, the judge allowed, or disallowed, modifications as she saw fit.

No refinement of the *Markman* process can eliminate this problem. As long as claim construction occurs before the jury is presented with the trial evidence, parties will seek to modify the construction wherever they see an advantage. The result will continue to be a disagreeable sausage-making process, with at least occasional unfairness for one side or the other.

¹⁴⁹ *Id.*

B. Semantic Antics: The Issues Become Surreal

Although well-intentioned, the Federal Circuit's efforts to delineate rational and consistent claim construction rules led to perplexing contortions and, occasionally, bewildering results. Underlying the difficulty was the Federal Circuit's desire for an almost algorithmic process, where the same input (a patent claim) would produce the same result (a correct claim construction) regardless of who applied the algorithm.¹⁵⁰ Since a consistently applied algorithm is impossible, the Federal Circuit decisions repeatedly disappointed. This a natural result of the Federal Circuit's concentration on the meaning of words, which contrasts sharply with the pre-Federal Circuit approach to claim construction. That approach focused not on word interpretation, but on a determination of what the inventor actually invented.¹⁵¹ The latter approach tacitly recognized that the same invention could be described by different words, but justice would be served by confining the patent to the actual invention, however described. This approach was rejected by the Federal Circuit, which was enthralled in its quest for the Holy Grail of predictability. The Federal Circuit was forced to grapple with endless semantic quibbles that as often as not obscured rather than clarified.

1. Dictionaries

If claim construction involves determining the meaning of the words used in the patent claim, then a natural resource to aid that process is a dictionary, technical or otherwise. Though this position is manifestly logical, the Federal Circuit still struggled to determine when—or even if—dictionaries could be used to help

¹⁵⁰ The Federal Circuit disavowed the existence of any algorithm in *Phillips*, saying that “there is no magic formula or catechism” and that it “did not attempt to provide a rigid algorithm for claim construction” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1324 (Fed. Cir. 2005). Yet the Federal Circuit's goal of predictability and certainty has no other implication.

¹⁵¹ *E.g.*, *Smith v. Snow*, 294 U.S. 1, 14 (1935) (“If the claim were fairly susceptible of two constructions, that should be adopted which will secure to the patentee *his actual invention.*” (emphasis added)).

construe the claims. Part of the struggle stemmed from the Federal Circuit's reasonable desire to ensure that the patent's specification was the primary claim construction tool, but part also flowed from the Federal Circuit's unceasing hunger to protect the rationale of *Markman*, so that extrinsic evidence (which most specifically included dictionaries) could not crack the edifice built from the "no issue of fact" gospel.

Before *Markman*, dictionaries were a consistent source used in claim construction issues, including in the regional circuits, in the C.C.P.A., and in the Federal Circuit.¹⁵² The practice continued after *Markman*, with the Federal Circuit repeatedly using, and approving, use of dictionaries.¹⁵³ Dictionaries, after all, provided a route to determine the "ordinary and customary" meaning of terms. Yet dictionaries often provided multiple meanings for words, and general dictionaries rarely defined words as they were used in esoteric technologies. Since claim construction had become a semantic jungle, focused upon ever more subtle distinctions in the "plain and ordinary" meaning¹⁵⁴ of words, several Federal Court decisions warned of the dangers posed by dictionaries.¹⁵⁵ When the

¹⁵² Cases from the regional circuits include: *Saunders v. Air-Flo Co.*, 646 F.2d 1201, 1206 (7th Cir. 1981); *Dickstein v. Seventy Corp.*, 522 F.2d 1294, 1297 (6th Cir. 1975); *Gen. Tire & Rubber Co. v. Firestone Tire & Rubber Co.*, 489 F.2d 1105, 1110 (6th Cir. 1973). C.C.P.A. cases include: *In re Gaubert*, 524 F.2d 1222, 1226 (C.C.P.A. 1975); *In re Skoll*, 523 F.2d 1392, 1395–96 (C.C.P.A. 1975); *In re Altenpohl*, 500 F.2d 1151, 1157 n.7 (C.C.P.A. 1974). Federal Circuit cases include: *Nike, Inc. v. Wolverine World Wide, Inc.*, 43 F.3d 644, 647 (Fed. Cir. 1994); *Conopco, Inc. v. May Dep't Stores Co.*, 46 F.3d 1556, 1561 n.2 (Fed. Cir. 1994); *Hoganas AB v. Dresser Indus., Inc.*, 9 F.3d 948, 951 (Fed. Cir. 1993).

¹⁵³ *E.g.*, *Teleflex, Inc. v. Ficoso N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002); *CCS Fitness, Inc. v. Brusnwick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002); *Optical Disc Corp. v. Del Mar Avionics*, 208 F.3d 1324, 1334–35 (Fed. Cir. 2000); *Quantum Corp. v. Rodime, PLC*, 65 F.3d 1577, 1581 (Fed. Cir. 1995).

¹⁵⁴ *E.g.*, *GE Lighting Solutions, LLC. v. Agilight, Inc.*, 750 F.3d 1304, 1308–10 (Fed. Cir. 2014).

¹⁵⁵ *Kinik Co. v. Int'l Trade Comm'n*, 362 F.3d 1359, 1365 (Fed. Cir. 2004) (holding that dictionaries are inappropriate for common words that might be used differently in the patent); *AFG Indus., Inc. v. Cardinal IG Co.* 239 F.3d 1239, 1248 (Fed. Cir. 2001) (holding that dictionaries should only be used when the patent fails to define a term); *Toro Co. v. White Consol. Indus., Inc.*, 199

*Texas Digital*¹⁵⁶ case expressed resounding support for dictionary use,¹⁵⁷ the resulting controversy prompted the Federal Circuit to consider, en banc, just how dictionaries could be used to help determine the meaning of terms.¹⁵⁸ The result was an elaborate discussion in *Phillips*, approving particular technical dictionary uses, approving fewer uses of general dictionaries, slotting dictionaries into the elaborate claim construction hierarchy of *Vitronics*, and limiting the broad language of *Texas Digital*.¹⁵⁹ Yet the dictionary guidance of *Phillips* was generalized, giving district courts ample opportunity to inadvertently misuse dictionaries and thereby justify yet another ground for reversal in a Federal Circuit de novo review.

2. Nonsensical Decisions

Achieving a fair and just resolution of legal disputes would seem a fundamental goal of the courts, even in patent cases. A priori, admittedly “nonsensical” decisions should be abhorred by all courts and avoided whenever possible. Yet the Federal Circuit, driven by a need to follow its *Markman* and *Vitronics* dictates, has ruled that “nonsensical” conclusions must be accepted when the Court’s claim construction process leads to that end. Thus, the process is all-important, and deviations cannot be accepted merely to avoid a nonsensical result.

The leading case adopting this proposition is *Chef America, Inc. v. Lamb–Weston, Inc.*,¹⁶⁰ which involved making bread. The claim specified heating the bread dough “to” a temperature of

F.3d 1295, 1299–300 (Fed. Cir. 1999) (holding that general dictionaries are unsuited to scientific meaning of words); *Anderson v. Int’l Eng’g & Mfg., Inc.*, 160 F.3d 1345, 1348–49 (Fed. Cir. 1998) (holding that, where dictionaries provide more than one meaning, the technical meaning must be taken from the context of the patent).

¹⁵⁶ *Texas Digital Sys., Inc. v. Telegenix, Inc.*, 308 F.3d 1193 (Fed. Cir. 2002).

¹⁵⁷ *Id.* at 1202–05.

¹⁵⁸ *Phillips v. AWH Corp.*, 415 F.3d 1303, 1319–22 (Fed. Cir. 2005).

¹⁵⁹ *Id.*

¹⁶⁰ *Chef America, Inc., v. Lamb–Weston, Inc.*, 358 F.3d 1371 (Fed. Cir. 2004).

400°F to 850°F.¹⁶¹ Yet if heated to that range, as every bread chef instinctively knew, the dough “would be burned to a crisp.”¹⁶² The patent owner argued that the claim obviously meant heating the dough “at” the specified temperature, which was the only logical interpretation of the claim.¹⁶³ The district court refused to so construe the patent, concluding instead that a nonsensical result was required.¹⁶⁴ The Federal Circuit agreed,¹⁶⁵ conclusively demonstrating that the process was more important than reaching a result that made sense.¹⁶⁶

Chef America was not the first decision adopting a “nonsensical” result. The “nonsensical” doctrine originated five years earlier, in *Process Control Corp. v. Hydreclaim Corp.*¹⁶⁷ Like *Chef America*, the *Process Control* decision approved a “nonsensical” result, this time reversing a district court that had refused to do so.¹⁶⁸ *Process Control*, however, involved a miswritten claim that used the same language for different processes in the specification.¹⁶⁹ The Federal Circuit invalidated the claim rather than interpreting it to cover the process in the specification,¹⁷⁰ thereby creating the principle applied in *Chef America*. While the principle’s application in *Process Control* was less unreasonable, the Federal Circuit nevertheless repeatedly applied it, not only in *Chef America* but in a series of subsequent cases.¹⁷¹ Yet those cases stand in sharp contrast to other decisions,

¹⁶¹ *Id.* at 1371.

¹⁶² *Id.* at 1373.

¹⁶³ *Id.*

¹⁶⁴ *Id.*

¹⁶⁵ *Id.* at 1374–76.

¹⁶⁶ The Federal Circuit also refused to accept the conclusion of an expert’s declaration that the patent’s text should be read “as meaning that the product is placed in an oven whose temperature has been set in the range of about 400°F to 850°F.” *Id.* at 1375. The expert explained that “[i]t was well known in 1987, and still is well known, that raising the temperature of a dough product itself to such high temperatures would result in an unusable product.” *Id.* The Federal Circuit was unmoved.

¹⁶⁷ 190 F.3d 1350 (Fed. Cir. 1999).

¹⁶⁸ *Id.* at 1355.

¹⁶⁹ *Id.*

¹⁷⁰ *Id.* at 1359.

¹⁷¹ *E.g.*, *Source Vagabond Sys. Ltd. v Hydrapak, Inc.*, 753 F.3d 1291, 1301

such as *AIA Engineering Ltd.*, where the Federal Circuit declared that “[w]e strive, where possible, to avoid nonsensical results in construing claim language.”¹⁷² In *AIA*, the Federal Circuit refused to give a claim term its ordinary meaning because it would be nonsensical.¹⁷³ The rule, then, is that the Federal Circuit will avoid nonsensical claim constructions, except when nonsensical constructions will be applied.¹⁷⁴

3. “Plain and Ordinary” Meaning

Vitronics held that “words in a claim are generally given their ordinary and customary meaning,”¹⁷⁵ and *Phillips* explained that the “ordinary and customary” meaning was “the meaning that the term would have to a person of ordinary skill in the art in question”¹⁷⁶ Determining what is “ordinary” or “customary” has not, however, been a simple task. *Phillips* described how the “ordinary” meaning “may be readily apparent even to lay judges,”¹⁷⁷ and in those circumstances “general purpose dictionaries may be helpful.”¹⁷⁸ Yet in many cases, “determining the ordinary and customary meaning of a claim requires examination of terms that have a

(Fed. Cir. 2014); *Braintree Labs., Inc. v. Novel Labs., Inc.*, 749 F.3d 1349, 1367 (Fed. Cir. 2014); *Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc.*, 520 F.3d 1358, 1362–63 (Fed. Cir. 2008).

¹⁷² *AIA Eng’g Ltd. v. Magotteaux Int’l S/A*, 657 F.3d 1264, 1276 (Fed. Cir. 2011). *Accord* *Becton, Dickinson & Co. v. Tyco Healthcare Group, LP*, 616 F.3d 1249, 1255 (Fed. Cir. 2010); *Bd. of Regents of the Univ. of Tex. Sys. v. BENQ Am. Corp.*, 533 F.3d 1362, 1370 (Fed. Cir. 2008).

¹⁷³ *AIA Eng’g Ltd.*, 657 F.3d at 1276.

¹⁷⁴ The “nonsensical” cases are akin to the decision in *Elektro Instr. S.A. v. O.U.R. Scientific Int’l*, 214 F.3d 1302 (Fed. Cir. 2000). *Vitronics* had ruled that claim interpretations that exclude the preferred embodiment are “rarely, if ever correct and would require highly persuasive evidentiary support.” 90 F.3d at 1583. Yet in *Elektro*, the Federal Circuit chose the “ordinary meaning” of the claims terms to construe the patent to not cover the only embodiment disclosed in the specification. 214 F.3d at 1307–08.

¹⁷⁵ *Vitronics Corp. v. Conception, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996).

¹⁷⁶ *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005).

¹⁷⁷ *Id.* at 1314.

¹⁷⁸ *Id.*

particular meaning in a field of art.”¹⁷⁹ And therein lies the rub. Despite the exhaustive efforts of the Federal Circuit to provide user-friendly rules for claim construction, litigants repeatedly, and sometimes sharply, dispute just what is the “ordinary and customary” meaning of claim terms.

Part of the difficulty arose from the evolution of the doctrine of “ordinary and customary” meaning into a doctrine of “plain and ordinary” meaning. “Ordinary” and “customary” are related terms, with “ordinary” implying that the meaning is common and not unusual, and “customary” implying that a meaning has some frequency of use. But “plain” is an entirely different concept, implying that the word’s meaning can be readily determined from the mere inspection of the term. Many “ordinary” terms are not at all “plain.” Yet the Federal Circuit has used both approaches, with little guidance on when a claim term’s meaning is “plain” rather than just “ordinary” or “customary.”¹⁸⁰ Thus, while the concept of an “ordinary” meaning predates *Markman*,¹⁸¹ loose use of terminology caused the eventual adoption of a “plain and ordinary” meaning standard, which is in common use today.¹⁸² Although the concepts have different meanings, the Federal Circuit has not explained when the “plain” meaning is apparent and should be used, rather than a term’s “ordinary” meaning, leaving district courts and litigants to follow the loose “dictionary” guidance of *Phillips*. Not surprisingly, plaintiffs have cleaved to the “plain” meaning approach—it allows them to argue any quasi-reasonable meaning for disputed terms, thereby providing them the flexibility they so dearly value. The Federal Circuit has criticized mere

¹⁷⁹ *Id.*

¹⁸⁰ The sloppiness may have resulted from a belief that an “ordinary and customary” meaning does not differ from a “plain and ordinary” meaning. For example, *Northern Telecom Ltd. v. Samsung Elec. Co.*, 215 F.3d 1281 (Fed. Cir. 2000), applied the “plain and ordinary” meaning standard, but cited a case that actually described the “ordinary and customary” standard. *Id.* at 1291 (citing *Johnson Worldwide Assoc. v. Zebco Corp.*, 175 F.3d 985, 990 (Fed. Cir. 1999)).

¹⁸¹ *E.g.*, *Intellicall, Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 1387 (Fed. Cir. 1992).

¹⁸² *E.g.*, *Stryker Corp. v. Zimmer, Inc.*, 774 F.3d 1349, 1353 (2014). The shift in terminology appears in *National Recovery Techs., Inc. v. Magnetic Separation Sys., Inc.*, 166 F.3d 1190, 1195 (Fed. Cir. 1999).

adoption of “plain meaning”¹⁸³ without explaining that meaning, so litigators, especially plaintiffs, continue to propose deciding that a term has a “plain meaning” that needs no further construction.

4. It Depends on the Meaning of “Or”

No demonstration of the impossibility of a predictable claim construction process, especially for terms that should have a “plain meaning,” is more vivid than in the two cases where the Federal Circuit was unable to agree on the meaning of the word “or.”¹⁸⁴ In both cases, infringement turned on whether “or” should be interpreted exclusively (*i.e.*, “A or B” but not “A and B”) or non-exclusively (“A or B” or “A and B”). In both cases, the majority ruled in favor of the exclusive “or,” saying it was the “plain reading” of the claim¹⁸⁵ or “quite clear” from the patent documents.¹⁸⁶ The dissent contended that “or” should be construed non-exclusively, saying that was the “practical common-sense way” of writing the claim,¹⁸⁷ and that the “plain meaning” of “or” could be either construction.¹⁸⁸ The *Markman–Vitronics* process cannot produce predictable results when the patent experts at the Federal Circuit, in attempting to follow that process, cannot agree on the meaning of even the most commonly used and simplest of English terms. The “or” cases show the fallacy of attempts to rely on either “plain” or “ordinary” meaning as interpreted by judicial experts.

A similar conclusion can be drawn from the somewhat less striking Federal Circuit decisions contesting the meaning of “on,”

¹⁸³ *O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1361 (Fed. Cir. 2008) (“A determination that a claim term ‘needs no construction’ or has the ‘plain and ordinary meaning’ may be inadequate when a term has more than one ‘ordinary’ meaning or when reliance on a term’s ‘ordinary’ meaning does not resolve the parties’ dispute.”).

¹⁸⁴ *Brown v. 3M*, 265 F.3d 1349 (Fed. Cir. 2001); *Kustom Signals, Inc. v. Applied Concepts, Inc.*, 264 F.3d 1326 (Fed. Cir. 2001).

¹⁸⁵ *Brown*, 265 F.3d at 1352.

¹⁸⁶ *Kustom*, 264 F.3d at 1331.

¹⁸⁷ *Brown*, 265 F.3d at 1354.

¹⁸⁸ *Kustom*, 264 F.3d at 1333.

*Senmed, Inc. v. Richard–Allan Medical Indus., Inc.*¹⁸⁹ and *Inverness Medical Switzerland GmbH v. Warner Lambert Co.*¹⁹⁰ The Federal Circuit struggled with that simple term both before and after *Markman*. In *Senmed*, the issue was whether “on” required physical touching.¹⁹¹ The majority ruled that it did,¹⁹² and the dissent argued that it need not.¹⁹³ In *Inverness*, the issue was whether “on” meant “on top of” a “test strip,” or whether “on” could include being interior to the strip, such that it was “on” just a portion of the strip.¹⁹⁴ The district court ruled that “on” meant on top of,¹⁹⁵ but the Federal Circuit reversed, ruling that the “plain meaning” of “on” included “within.”¹⁹⁶ Again, these cases demonstrate that a term’s “plain meaning” can be anything but plain, and is usually dependent on the eye of the beholder.

VI. OTHER ISSUES

Much of consequence resulted from *Markman* that cannot be attributed to the Federal Circuit’s quixotic devotion to de novo review. And while the most significant cases produced consternation, confusion, and even conflict, other significant changes occurred, some for the good and others less so.

A. Phillips

The 2005 decision in *Phillips* addressed a host of topics in an attempt to resolve disputes within the Federal Circuit and address the growing criticism of the *Markman–Vitronics* regimen.¹⁹⁷ While

¹⁸⁹ 888 F.2d 815 (Fed. Cir. 1989).

¹⁹⁰ 309 F.3d 1373 (Fed. Cir. 2002).

¹⁹¹ *Senmed*, 888 F.2d at 821.

¹⁹² *Id.*

¹⁹³ *Id.* at 824.

¹⁹⁴ *Inverness Med. Switz.*, 309 F.3d at 1377–78.

¹⁹⁵ *Id.* at 1378.

¹⁹⁶ *Id.* at 1382.

¹⁹⁷ The Federal Circuit reheard the case en banc “to resolve issues concerning the construction of patent claims” that the original panel had raised. *Phillips v. AWH Corp.*, 376 F.3d 1382, 1382 (Fed. Cir. 2005). Seven claim construction topics were selected for resolution. *Id.* at 1383.

Phillips was criticized for failing to resolve the question of deference to the trial court rulings, it did clarify some unresolved issues. Its extensive discussion of dictionaries firmly established that dictionaries could be consulted,¹⁹⁸ and it expressed a preference for technical over general dictionaries.¹⁹⁹ If the remainder of *Phillips*'s discussion of dictionaries was less than fully edifying, the decision nevertheless eliminated one uncertainty for district courts and litigants. *Phillips* also reaffirmed that "claims should be so construed, if possible, to sustain their validity,"²⁰⁰ but did not endorse "a regime in which validity analysis is a regular component of claim construction."²⁰¹ Instead, preserving validity should be considered when the claim is still ambiguous "after applying all the available tools of claim construction."²⁰²

Phillips also confirmed that some of the basic principles of *Vitronics* would not be disturbed, thereby ending some of the clamor for revision. The primacy of the specification was cemented into claim construction law, with *Phillips* declaring that courts can "rely heavily on the written description for guidance as to the meaning of the claims."²⁰³ Expert testimony was again endorsed, but again for a difficult-to-follow role: "to ensure that the court's understanding of the technical aspects of the patent is consistent with that of a person of skill in the art, or to establish that a particular term in the patent or the prior art has a particular meaning in the pertinent field."²⁰⁴ The door was therefore open for extensive use of experts, but not for "conclusory, unsupported assertions."²⁰⁵ Instead, *Phillips* concluded that "a court should discount any expert testimony 'that is clearly at odds with the claim construction mandated by the claims themselves, the written description, and the prosecution history'"²⁰⁶ This process

¹⁹⁸ *Id.* at 1317–21.

¹⁹⁹ *Id.* at 1321.

²⁰⁰ *Id.* at 1327.

²⁰¹ *Id.*

²⁰² *Id.*

²⁰³ *Id.* at 1317.

²⁰⁴ *Id.* at 1318.

²⁰⁵ *Id.*

²⁰⁶ *Id.* (quoting *Key Pharm. v. Hercon Labs. Corp.*, 161 F.3d 709, 716 (Fed.

essentially gave district courts license to listen to any and all expert testimony, as long as their claim construction opinion properly focused on the specification and prosecution history and did not improperly credit experts.

Recognizing reality, *Phillips* conceded that “there is no magic formula or catechism for conducting claim construction.”²⁰⁷ That recognition relieved district courts of the concern that a reversal would result merely from following the wrong sequence of steps or holding the wrong kind of hearing. Moreover, *Phillips* underscored the “cardinal sin” of patent law, “reading a limitation from the written description into the claims,”²⁰⁸ again emphasizing the primacy of the “ordinary and customary meanings attributed to the words themselves.”²⁰⁹ The natural tension between reading a limitation from the specification into the claims and paying primary attention to the context of terms in the specification was, sadly, not resolved. Despite the remaining uncertainties, *Phillips* provided sufficient guidance that it became the bedrock of all subsequent claim interpretation cases; it provided enough clarity for judges and litigants to become comfortable with the resulting process, even while the ultimate outcome of claim construction remained unpredictable.

B. Preferring Narrow Interpretations

An important claim construction doctrine developed separate from the *Vitronics–Phillips* line of cases, one that evidenced a distinctly pro-defendant bias. In *Athletic Alternatives, Inc. v. Prince Mfg., Inc.*,²¹⁰ the Federal Circuit announced a preference for narrow, rather than broad claim constructions.²¹¹ *Athletic Alternatives* addressed a circumstance where an “equal choice”

Cir. 1998)).

²⁰⁷ *Id.* at 1324.

²⁰⁸ *Id.* at 1320 (quoting *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1340 (Fed. Cir. 2001)).

²⁰⁹ *Id.* (quoting *Texas Digital Sys., Inc. v. Telegenix, Inc.*, 308 F.3d 1193, 1204 (Fed. Cir. 2002)).

²¹⁰ 73 F.3d 1573 (Fed. Cir. 1996).

²¹¹ *Id.* at 1581.

existed between a narrower and broader meaning of a claim. To resolve the question, the Federal Circuit announced a preference for the narrower interpretation.²¹² Its reasoning was peculiar: patents must provide “fair notice” of their scope, and the Federal Circuit declared “the notice function of the claim to be best served by adopting the narrower meaning.”²¹³ Yet as a matter of logic, the notice function is served merely by having a rule that resolves the ambiguity flowing from equally valid constructions. That ambiguity would have been similarly resolved by choosing the broader interpretation. Nothing in *Athletic Alternatives* explained just why narrower interpretations provide inherently greater notice than broad interpretations. Nor did the Federal Circuit explain how its policy decision to favor narrow patents was consistent with encouraging innovation, which, after all, is the fundamental purpose of the patent system. One can easily argue that a policy favoring narrow patents reduces the rewards to inventors and thereby discourages innovation. The Federal Circuit nevertheless selected narrow interpretations.²¹⁴

C. Knowledge of the Accused Device

Pre-*Markman* cases sometimes took the logical but impractical position that claims were to be construed “without reference to the accused device.”²¹⁵ That approach was a relic of the view that an objective interpretation of a patent would best be made without knowing the kind of structure sought to be covered by the patent. Other pre-*Markman* cases accepted reality, holding that claims are “construed independent of the accused product,” but that “the

²¹² *Id.*

²¹³ *Id.*

²¹⁴ A related philosophy regarding the doctrine of equivalents was expressed in *Sage Products, Inc. v. Devon Indus., Inc.*, 126 F.3d 1420 (Fed. Cir. 1977), where the Federal Circuit considered an attempt to use the doctrine of equivalents to cover a “foreseeable” problem in the claim language. The Federal Circuit declared that “it is the patentee who must bear the cost of its failure to seek protection for this foreseeable alteration of its claimed structure.” *Id.* at 1425.

²¹⁵ *E.g.*, *SRI Int’l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1118 (Fed. Cir. 1985).

particular accused product (or process) is kept in mind, for it is efficient to focus on the construction of only disputed elements or limitations in the claims.”²¹⁶ After *Markman*, the Federal Circuit recognized that constructions that were devoid of knowledge of the infringement issues might not address the actual dispute. This, of course, would produce the inefficient “whack-a-mole” process that required a subsequent revisit of claim construction issues that trial courts believed were resolved. The Federal Circuit eliminated all uncertainty by expressly accepting that the trial court could consider the accused product, and indeed, can be helped by that evaluation.²¹⁷ The result improved claim constructions by sharpening the trial court’s focus and reducing the need for constructions to be revisited.

VII. DISTRICT COURT REACTIONS

Claim construction at the district court level was impacted at least as much by district court reactions to *Markman* and its progeny as the Federal Circuit decisions. As soon as district courts recognized that patent cases imposed the additional burden of a separate hearing to evaluate patent claims, individual judges and districts began to react and modify their practices accordingly.

A. Local Patent Rules

The first and most significant district court reaction to *Markman* was the adoption of local rules that would regularize the steps leading to *Markman*. Beginning with Northern California²¹⁸ (a district with a penchant for lengthy and complicated rules for every aspect of litigation), local patent rules began to dominate. Such rules normally mandate initial disclosures identifying the

²¹⁶ *Scripps Clinic & Res. Found. v. Genentech, Inc.*, 927 F.2d 1565, 1580 (Fed. Cir. 1991).

²¹⁷ *E.g.*, *Wilson Sporting Goods Co. v. Hillerich & Bradsby Co.*, 442 F.3d 1322, 1326–27 (Fed. Cir. 2006); *Pall Corp. v. Hemasure, Inc.*, 181 F.3d 1305, 1309 (Fed. Cir. 1999).

²¹⁸ *Patent Local Rules*, U.S. DIST. COURT, N. DIST. CAL., <http://www.cand.uscourts.gov/localrules/patent> (last updated Nov. 1, 2014).

accused product or process and describing the plaintiff's theory of infringement, followed by an identification of the defendant's invalidity contentions. The process next includes identification of disputed claim terms and exchange of the parties' proposed constructions, followed by briefing to the district court. The practice is cumbersome and, at least in some cases, more involved than is necessary, adding to the complexity and cost of even the simplest patent case.

District court judges nevertheless welcomed such rules because they freed individual judges from having to decide which procedure was most appropriate for each case.²¹⁹ Defendants liked local rules because they mandated early disclosure of infringement theories that previously might have been obtained only after lengthy discovery battles. Plaintiffs with weak cases liked the rules because the burden on defendants, merely to get a claim interpretation, often encouraged early nuisance settlements. Defense lawyers loved the rules because the need for early invalidity contentions guaranteed extensive work before any substantive ruling in the case. Eventually, twenty-eight districts adopted local patent rules, including all major commercial jurisdictions (with the notable exception of the District of Delaware).²²⁰ Squabbles over the sufficiency of infringement contentions then became the norm, along with massive invalidity contentions. Motions to strike infringement and invalidity contentions became the norm, and legions of patent litigators became specialists in just the claim construction procedures of popular patent districts, such as the Eastern District of Texas and the Northern District of California.

²¹⁹ The most common justification was “[l]ocal patent rules seek to advance the orderly progression of patent litigation by requiring the parties ‘to crystallize their theories of the case early in the litigation and to adhere to those theories once they have been disclosed.’” *Copper Innovations Group, LLC v. Nintendo Co.*, No. 2:07CV1752, 2012 WL 628465, at *2 (W.D. Pa. Feb. 27, 2012) (quoting *Atmel Corp. v. Info. Storage Devices, Inc.*, No. C 95-1987 FMS, 1998 WL 775115, at *2 (N.D. Cal. Nov. 5, 1998)).

²²⁰ The local patent rules across the country are gathered at <http://www.localpatentrules.com>.

B. The Obligation to Construe, and Limits on the Number of Terms

Despite the local rules, district court judges quickly came to realize that claim construction was a difficult and time-consuming process, as even the simplest technology produced wrangling over competing definitions of both common and uncommon words. Most patent cases do not settle before claim construction, so most cases require a hearing and a difficult opinion. Trial judges naturally sought ways to limit the portion of their valuable resources that were devoted to patent cases, and accordingly began setting limits on the number of terms they were willing to construe, either by saying that claim terms have their “plain meaning” or by setting a limit on the number of terms to be construed and leaving the parties to choose the most important terms. The result was *O2 Micro*, which ruled that “[w]hen the parties present a fundamental dispute regarding the scope of a claim term, it is the court’s duty to resolve it.”²²¹ Realism also prevailed, because the Federal Circuit also recognized that “district courts are not (and should not be) required to construe every limitation present in a patent’s asserted claims.”²²² Trial courts now regularly limit the parties to ten or fifteen claim terms in any *Markman* proceeding. Since many cases involve disputes over many more terms, the result has been a partial return to the pre-*Markman* days, with the jury presented with trial arguments, and even trial expert testimony, on the meaning of contested claim terms.²²³

²²¹ *O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008).

²²² *Id.*

²²³ In *O2 Micro*, the district court ruled that the term “only if” needed no construction, *id.* at 1361, so “the district court left the jury free to consider” the parties’ arguments. *Id.* at 1362. The plaintiff then “presented expert testimony to support its argument” on the meaning of “only if.” *Id.* While the Federal Circuit reversed in *O2 Micro*, *id.* at 1366, claim interpretation arguments before juries are the natural result of limits on the quantity of terms for construction. Of course, even under *Markman* some form of claim interpretation has always been presented to juries, when the litigants argue their differing interpretations of the claim constructions, especially in closing argument.

VIII. *TEVA PHARMACEUTICALS*

Once the Supreme Court affirmed *Markman*'s removal of claim construction from juries, the crucial remaining problem was the lack of deference to trial court claim constructions. When the Federal Circuit refused to modify its de novo review process in *Cybor*, the issue continued to fester and produce repeated criticisms. The issue was again revised sixteen years after *Cybor* in *Lighting Ballast Control v. Philips Electronics North America Corp.*,²²⁴ but the 1995 rule of *Markman* was not modified until the Supreme Court finally spoke in *Teva Pharmaceuticals USA, Inc. v. Sandoz, Inc.*²²⁵

A. *Lighting Ballast*

Lighting Ballast was the Federal Circuit's en banc revisit of de novo review. The Federal Circuit again solicited amicus briefs, this time directed to whether *Cybor* should be overruled, whether deference should be given to the district court's claim construction, and if so, how that deference should be afforded.²²⁶ The court received thirty-eight amicus briefs, arguing approaches that spanned the spectrum of potential results.²²⁷ The Federal Circuit, in a decision authored by Judge Newman, one of the previous staunch opponents of de novo review, concluded that the standard of *Cybor* should be maintained, based upon stare decisis.²²⁸ Rejecting the criticism of de novo review, the Federal Circuit decided that "[t]here has been extensive experience of *Cybor* in action,"²²⁹ that "no proponent of change has shown that de novo review of claim construction is unworkable,"²³⁰ so there is "neither 'grave necessity' nor 'special justification' for departing from *Cybor*."²³¹

²²⁴ 744 F.3d 1272 (Fed. Cir. 2014).

²²⁵ 135 S. Ct. 831 (2015).

²²⁶ *Lighting Ballast Control LLC v. Philips Elec. N. Am. Corp.*, 744 F.3d 1272, 1277.

²²⁷ *Id.*

²²⁸ *Id.* at 1281, 1292.

²²⁹ *Id.* at 1281.

²³⁰ *Id.* at 1283.

²³¹ *Id.* at 1286.

Four judges, including the Chief Judge,²³² dissented,²³³ but it was all for naught. *Cybor* and the de novo review standard remained unchanged. The stage was now set for *Teva*.

B. *Teva*

The issues in *Teva* centered on a dispute that should not exist in the world of *Vitronics*: how to resolve the meaning of a common technical term that had three accepted definitions. The claims defined the invention in terms of “molecular weight,” which can be “peak average molecular weight,” “number average molecular weight,” or “weight average molecular weight.”²³⁴ The district court took testimony from experts and concluded that the term “molecular weight” was definite and meant “peak average molecular weight.”²³⁵ The Federal Circuit reviewed the decision de novo, disagreed, and ruled the claim indefinite.²³⁶ The Supreme Court thus reviewed whether the district court’s ruling should have been decided on the “clear error” standard applicable to findings of fact under Rule 52.

The Supreme Court vacated the Federal Circuit in a sweeping rebuff of *Cybor* and *Lighting Ballast*.²³⁷ Rejecting long-cherished interpretations of *Markman*, the Supreme Court described its *Markman* holding as recognition “that in patent construction, subsidiary fact finding is sometimes necessary.”²³⁸ In that circumstance, Rule 52 “requires appellate courts to review all such subsidiary factual findings under the ‘clearly erroneous’ standard.”²³⁹ In doing so, the Supreme Court noted the obvious and vindicated Judge Mayer’s dissents in *Cybor* and *Phillips*: “A

²³² *Id.* at 1296.

²³³ The dissent contended that the *Cybor* approach “misapprehends the Supreme Court’s guidance, contravenes the Federal Rules of Civil Procedure, and adds considerable uncertainty and expense to patent litigation.” *Id.* at 1297 (addressing *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448).

²³⁴ *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 836 (2015).

²³⁵ *Id.*

²³⁶ *Id.*

²³⁷ *Id.* at 842.

²³⁸ *Id.* at 838.

²³⁹ *Id.*

district court judge who has presided over, and listened to, the entirety of a proceeding has a comparatively greater opportunity to gain that familiarity than an appeals court judge who must read a written transcript or perhaps just those portions to which the parties have referred.”²⁴⁰

De novo review is therefore gone when the District Court conducts a subsidiary fact finding, and a new claim construction era has begun based upon a more realistic interpretation of claim construction. The established and now comfortable proceedings based on *Vitronics* and *Philips* no longer apply, and new procedures and new strategies will have to be developed. Yet the Supreme Court left the door open for the Federal Circuit to cling to its old practices, when it limited its ruling to circumstances where a district court examines extrinsic evidence, especially expert testimony. “As all parties agree, when the district court reviews only evidence intrinsic to the patent (the patent claims and specifications, along with the patent’s prosecution history), the judge’s determination will amount solely to a determination of law, and the Court of Appeals will review that construction *de novo*.”²⁴¹ Just how the interplay between extrinsic and intrinsic evidence will occur after *Teva* remains to be seen. For now, two decades of unrealistic treatment of extrinsic evidence have been relegated to the compost heap.

CONCLUSION

As Yogi Berra aptly stated, “It’s tough to make predictions, especially about the future.” *Teva* has upset the applecart, and long-established claim construction precedent now has questionable value. Recognizing that the uncertainty is great, the following results appear likely in the future of claim construction:

First, the Federal Circuit will do all it can to preserve its de novo precedent. Where the district court makes no express fact findings, the Federal Circuit will decide that the trial court decision was entirely based on legal conclusion, so no deference and no

²⁴⁰ *Id.* (citing similar statements by Judge O’Malley in her *Lighting Ballast* dissent, 744 F.3d 1272, 1311 (Fed. Cir. 2014) (O’Malley, J., dissenting)).

²⁴¹ *Id.* at 841.

“clear error” evaluation is needed. Indeed, most initial decisions rendered after *Teva* fit that mold—where the district court did not describe use of any extrinsic evidence in the district court’s decision, the Federal Circuit treated the matter as “business as usual” and evaluated the case de novo.²⁴² Litigants, however, will take an entirely different view. Experts will experience a new popularity in claim construction, both through submission of declarations and through live testimony. The Federal Circuit may well contend that de novo review is still proper when expert testimony is provided by declaration (since it can review such testimony from the same perspective as the district court), so we can expect litigants to more frequently request live testimony at hearings. Some litigants will test the limits of testimonial evidence, even by proffering inventor testimony. And wily trial judges will reduce their chance of reversal by accepting live testimony and then preparing express “findings of fact” that rely on the testimony. Regardless, experts will now have a role extending far beyond merely explaining the technology. How the rules of evidence will be applied and evaluated on appellate review is likely to vary greatly across the courts.

Second, the *Teva* rule will slowly erode the “public notice” aspect of claim construction. When the public generally and competitors specifically are unable to predict the testimony at *Markman* hearings, the fiction that claim interpretations are

²⁴² See *Cadence Pharm., Inc. v. Exela Pharmasci, Inc.*, 780 F.3d 1364, 1371 (Fed. Cir. 2015); *Mobile Ideas LLC v. Apple, Inc.*, 780 F.3d 1159, 1172–73 (Fed. Cir. 2015); *Pacing Techs., LLC v. Garmin Int’l, Inc.*, 778 F.3d 1021, 1023 (Fed. Cir. 2015); *In re Papst Licensing Digital Camera Patent Litig.*, 778 F.3d 1255, 1261 (Fed. Cir. 2015). Three early Federal Circuit cases cited the *Teva* standard but did not commit to using the “clear error” standard. See *Enzo Biochem, Ind. v. Applera Corp.*, 780 F.3d 1149, 1155–56 (Fed. Cir. 2015); *Warsaw Orthopedic, Inc. v. NuVasive, Inc.*, 778 F.2d 1365, 1369 (Fed. Cir. 2015); *Fenner Inv., Ltd. v. Cellco P’ship*, 778 F.3d 1320, 1322 (Fed. Cir. 2015). Two early Federal Circuit cases found a justification to follow de novo review despite the presence of some extrinsic facts. See *Vasudevan Software, Inc. v. Microstrategy, Inc.*, 782 F.3d 671, 680–81 (Fed. Cir. 2015) (district court’s use of stipulation from another litigation did not prevent de novo review); *Eidos Display, LLC v. AU Optronics Corp.*, 779 F.3d 1360, 1365 (stating that extrinsic evidence considered by district court was immaterial because the intrinsic record is clear).

predictable from the intrinsic evidence will fade. We can, however, expect the Federal Circuit to use the need for public notice to justify limits on testimony—limits that are not now apparent.”

Teva does not address other claim construction issues. Claim construction will still occur separate from the jury’s evaluation of infringement, so the whack-a-mole problem will continue. District courts will still want to minimize their efforts, so they will retain or even expand limits on the number of claims that can be interpreted, leading to more claim interpretation arguments before juries. District courts will still construe claims as a collage, mixing the proposals of the parties with the court’s own views, preserving one of the key elements of unpredictability. And the litigants and courts will continue to argue the meaning of simple English language terms such as “or,” “on,” or perhaps even “is.” Patent claims are written in English, a language with a rich variety of meaning for most every term. Uncertainty will continue to prevail.

THE OTHER SIDE OF THE COIN: THE FEC’S MOVE TO
APPROVE CRYPTOCURRENCY’S USE AND
DENY ITS VIABILITY

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<http://digital.lib.washington.edu/dspace-law/handle/1773.1/1453>

ABSTRACT

This Article examines the implications of the Federal Election Committee’s May 2014 advisory opinion on cryptocurrency’s viability within campaign finance regulation, and U.S. financial regulation more generally. Although the Commissioners sharply disagreed on whether Bitcoin is a cash or in-kind contribution, they voted unanimously to allow political committees to accept Bitcoin donations. Moreover, all the Commissioners agreed that Bitcoin donors must disclose their names, addresses, and occupations. While many view this decision as pushing Bitcoin and cryptocurrency further toward legitimacy, in actuality it undermines one of cryptocurrency’s distinct functionalities: pseudonymity. Paradoxically, while it approves the use of Bitcoin in campaign finance, the FEC ruling impairs cryptocurrency’s future within financial regulatory schemes.

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INTRODUCTION

Cryptocurrency, particularly Bitcoin, has recently attracted significant media and regulatory attention. Cryptocurrencies rely on peer-to-peer networking, which limits the need for a central, controlling authority. An entire network of Bitcoin users authenticates transactions, rather than needing a government or bank to control the flow of this form of currency. This reduces the need for interaction with financial institutions. Cryptocurrencies appeal to those who would like to remain anonymous, as payments can be made without the exchange of any personal information.¹ It

¹ In a paper that established the fundamental concepts Bitcoin is built on, Satoshi Nakamoto, the “creator” of Bitcoin, recommended that Bitcoin users use a new address for each transaction to avoid the transactions being linked to a common owner. Satoshi Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System*, BITCOIN.ORG 1, 6, <http://Bitcoin.org/Bitcoin.pdf> (last visited June 13, 2015). Additionally, many Bitcoin users advocate for ways to increase anonymity. See *Anonymity*, BITCOIN SIMPLIFIED, <http://bitcoinsimplified.org/>

is important to note, however, that Bitcoin is not truly anonymous.² Although using Bitcoins does not necessarily require revealing any identifying information, all Bitcoin transactions are traced on the blockchain (a public ledger of all Bitcoin transactions).³ Researchers have highlighted methods to de-anonymize Bitcoin transactions.⁴ Accordingly, Bitcoin's algorithm is more accurately described as pseudonymous, although methods exist to increase (or even ensure) its anonymity.⁵

Since cryptocurrency first appeared in the marketplace in the 1990s, those responsible for monetary policy, payment systems operators, businesses, and consumers have grappled with understanding how cryptocurrency works. More challenging still is deciding the manner and the extent to which cryptocurrency should be regulated, particularly in an area where the role of money is already contentious: campaign finance.

The Federal Election Commission (FEC) approved Bitcoin contributions in a unanimous advisory opinion on May 8, 2014, but the opinion is only in response to a narrow question and arguably raises more questions than it answers.⁶ Additionally, soon after releasing the decision, the agency's six Commissioners offered divergent views on whether Bitcoin contributions must be capped at \$100 per election per donor, or whether candidates, political action committees, and parties may accept the currency in larger amounts.⁷

learn-more/anonymity (last visited May 2, 2015).

² Fergal Reid & Martin Harrigan, Ch. 1: An Analysis of Anonymity in the Bitcoin System 26 (May 7, 2012) (unpublished manuscript), *available at* <http://arxiv.org/pdf/1107.4524v2.pdf>.

³ *Id.*

⁴ See Alex Biryukov, Dmitry Khovratovich & Ivan Pustogarov, *Deanonymisation of Clients in Bitcoin P2P Network*, in CONFERENCE ON COMPUTER AND COMMUNICATIONS SECURITY (Nov. 2014), *available at* <http://hdl.handle.net/10993/18679>.

⁵ BITCOIN SIMPLIFIED, *supra* note 1.

⁶ FED. ELECTION COMM'N, ADVISORY OPINION 2014-02 (May 8, 2014), *available at* <http://saos.fec.gov/aodocs/2014-02.pdf> [hereinafter FEC ADVISORY OPINION].

⁷ This ambiguity hinges on whether the FEC defines Bitcoin donations as cash or in-kind contributions, a point on which the Commissioners offered conflicting statements after their unanimous vote. See Statement of Vice Chair

This Article first notes that the regulatory status of cryptocurrency does not hinge on the FEC's divergence, but rather on its agreement. All six Commissioners agreed that Bitcoin donors are subject to existing (if not more stringent)⁸ disclosure laws: they are required to provide names, addresses, and employment information with every donation. However, this requirement is at odds with one of the central ideas behind Bitcoin: pseudonymity.⁹ Coupled with previous U.S. regulatory pronouncements,¹⁰ the FEC opinion detracts from Bitcoin's viability within U.S. campaign finance regulations that prioritize disclosure and transparency.¹¹ Moreover, the FEC decision has far-reaching implications for not only Bitcoin, but also cryptocurrency in general. Bitcoin is currently the most widely used cryptocurrency, but the regulatory guidance can be extrapolated to apply to other current and future decentralized, pseudonymous, or anonymous virtual currencies.

Part I of this Article explains the background and technical details of cryptocurrency, with an emphasis on Bitcoin. It discusses the advantages and drawbacks, addressing its unique regulatory

Ann M. Ravel, Commissioner Steven T. Walther & Commissioner Ellen M. Weintraub, *Advisory Opinion 2014-02 (Make Your Laws, PAC, Inc.)*, FEDERAL ELECTION COMMISSION (May 8, 2014), <http://saos.fec.gov/aodocs/1256453.pdf> [hereinafter *Statement of Democratic Commissioners*]; Lee E. Goodman, *Statement of Chairman Lee E. Goodman on Advisory Opinion 2014-02 (Make Your Laws PAC)*, FEDERAL ELECTION COMMISSION (May 8, 2014), <http://saos.fec.gov/aodocs/1256452.pdf> [hereinafter *Statement of Chairman Goodman*].

⁸ *Id.* The advisory opinion also requires Bitcoin donors to verify that they are not foreign nationals.

⁹ As all transactions in the network are stored publicly in the blockchain, allowing anyone to inspect and analyze them, the system does not provide real anonymity but pseudonymity. See Malte Möser, Rainer Böhme & Dominic Breuker, *An Inquiry into Money Laundering Tools in the Bitcoin Ecosystem*, APWG eCRIME RESEARCHERS SUMMIT (2013).

¹⁰ See, e.g., I.R.S. Notice 14-21, 2014-16 I.R.B. 938, available at <http://www.irs.gov/pub/irs-drop/n-14-21.pdf>.

¹¹ CLYDE WILCOX, TRANSPARENCY AND DISCLOSURE IN POLITICAL FINANCE: LESSONS FROM THE UNITED STATES (June 2001) ("All sides of the campaign finance debate accept the disclosure requirement, and it is almost an article of faith in the U.S. that disclosure leads to a less corrupt campaign system.").

challenges in regards to campaign finance. Part II then discusses cryptocurrency in light of campaign finance by introducing the FEC's May 8, 2014 advisory opinion. Finally, Part III explores the implications of the advisory opinion and the Commissioners' public comments. This Article ultimately argues that the nature of cryptocurrency may not be reconcilable with the objective of transparency in campaign finance.

I. CURRENCY

A. Traditional Currency

Currency is broadly defined as “[t]okens used as money in a country.”¹² The Financial Crimes Enforcement Network (FinCEN) defines currency as “the coin and paper money of the United States or of any other country that [i] is designated as legal tender and that [ii] circulates and [iii] is customarily used and accepted as a medium of exchange in the country of issuance.”¹³ FinCEN terms these currencies as “real currencies.”¹⁴ In addition to these characteristics, relatively stable currency values are achieved by public trust in the continued rational government manipulation of the money supply,¹⁵ which are features that virtual currencies may lack.

B. Virtual Currency

Unlike real currencies, virtual currencies are online payment systems that may function as “real” currencies but are not issued or

¹² *Currency*, BUSINESSDICTIONARY.COM, <http://businessdictionary.com/definition/currency.html> (last visited May 2, 2015).

¹³ *Application of FinCEN's Regulations to Persons Administering, Exchanging, or Using Virtual Currencies*, DEP'T OF THE TREASURY FIN. CRIMES ENFORCEMENT NETWORK 1 (Mar. 18, 2013) (quoting 31 C.F.R. § 1010.100(m)), available at http://fincen.gov/statutes_regs/guidance/pdf/FIN-2013-G001.pdf [hereinafter *FinCEN Application*].

¹⁴ *Id.*

¹⁵ See Irena Asmundson & Ceyda Oner, *Back to Basics: What Is Money?*, INT'L MONETARY FUND (Sept. 2012), <http://www.imf.org/external/pubs/ft/fandd/2012/09/basics.htm>.

backed by a central government. Therefore, they do not have legal tender status in any jurisdiction,¹⁶ which means that they are not required to be accepted as forms of payment. According to the Government Accountability Office (GAO), “[a] virtual currency is, generally, a digital unit of exchange that is not backed by a government-issued legal tender. Virtual currencies can be used entirely within a [video game world], or can be used in lieu of a government-issued currency to purchase goods and services in the real economy.”¹⁷ In simplified terms, a virtual currency is one that is not administered or issued by a sovereign. For instance, the popular video game World of Warcraft has its own internal virtual currency that is separate from traditional, “real” currency.¹⁸

C. Cryptocurrency

Unlike virtual currencies that are associated with video game worlds, cryptocurrencies “function as a unique currency with [their] own free-floating exchange.”¹⁹ They are digital or virtual currencies that use cryptography for security and are difficult to counterfeit because of this security feature.²⁰ David Chaum, a computer scientist, started one of the first cryptocurrencies, known as DigiCash, in the early 1990s.²¹ He “obtained . . . digital currency patents in the 1980s related to ensuring anonymity using cryptography.”²² Although DigiCash ultimately failed,²³ the idea of

¹⁶ U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-13-516, VIRTUAL ECONOMIES AND CURRENCIES: ADDITIONAL IRS GUIDANCE COULD REDUCE TAX COMPLIANCE RISKS 3 (2013), available at <http://www.gao.gov/assets/660/654620.pdf>.

¹⁷ *Id.*

¹⁸ *Currency*, WOWWIKI, <http://www.wowwiki.com/Currency> (last visited May 2, 2015).

¹⁹ David D. Stewart & Stephanie Soong Johnston, *Virtual Currency: A New Worry for Tax Administrators?*, 68 TAX NOTES INT’L 423, 423 (2012).

²⁰ *Definition of “Cryptocurrency”*, INVESTOPEDIA.COM, <http://www.investopedia.com/terms/c/cryptocurrency.asp> (last visited May 2, 2015).

²¹ David Chaum, *Blind Signatures for Untraceable Payments*, in ADVANCES IN CRYPTOLOGY: PROCEEDINGS OF CRYPTO 82 (1982).

²² *Id.*

²³ Jens-Ingo Brodesser, *FM Interviews: David Chaum*, FIRST MONDAY (July 1999), <http://firstmonday.org/ojs/index.php/fm/article/view/683/593>.

an anonymous (or pseudonymous) and cryptographic currency developed over the course of the 1990s. The idea flourished through a Cypherpunk electronic mailing list²⁴ that included individuals who “advocated the use of cryptography . . . for the protection of private individuals, against each other and against the government.”²⁵ The group’s members included prominent newsmakers, such as Wikileaks founder Julian Assange²⁶ and a co-founder of the Electronic Frontier Foundation (EFF), John Gilmore.²⁷ The list had a pronounced libertarian streak, opposing most regulation, advocating for privacy, and seeking to use cryptocurrencies to achieve these ends.²⁸ In line with their cypherpunk founders’ views, cryptocurrencies have the potential to challenge government supervision of monetary policy by the disruption of current payment systems and the avoidance of existing regulatory schemes.

At least a dozen cryptocurrencies in addition to Bitcoin currently exist. They include: (1) Litecoin, considered the “most valuable cryptocurrency after Bitcoin;” (2) PPCoin; (3) Dogecoin; (4) Freicoin; (5) Namecoin; (6) Terracoin; (7) Ripple; and (8) Feathercoin; among others.²⁹ Numerous other virtual currencies have failed, including Solidcoin, BBQcoin, Fairbrix, and Geist

²⁴ See CYPHERPUNKS, <http://www.cypherpunks.to> (last visited May 2, 2015) (“[C]ypherpunks.to is a center for research and development of cypherpunk projects such as remailers, anonymous peer-to-peer services, secure network tunnels, mobile voice encryption, untraceable electronic cash, and secure operating environments, etc.”).

²⁵ Sarah Jeong, *The Bitcoin Protocol as Law, and the Politics of a Stateless Currency* 9 (Harvard Law Sch., Working Paper, May 8, 2013), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2294124.

²⁶ JULIAN ASSANGE, CYPHERPUNKS 2012 (Julian Assange is known for his whistleblowing activities as the founder of Wikileaks); see also *Cypherpunks, Bitcoin & the Myth of Satoshi Nakamoto*, CYBER SALON (Sept. 5, 2013), <http://www.cybersalon.org/cypherpunk>.

²⁷ CYBER SALON, *supra* note 26.

²⁸ Reuben Grinberg, *Bitcoin: An Innovative Alternative Digital Currency*, 4 HASTINGS SCI. & TECH. L.J. 159, 162 (2012).

²⁹ Andrew R. Johnson, *From Bitcoin to Amazon Coins: A Guide to Virtual Currencies*, WALL ST. J. (May 31, 2013, 6:04 PM), <http://blogs.wsj.com/moneybeat/2013/05/from-bitcoin-to-amazon-coins-a-guide-to-virtual-currencies>.

Geld.³⁰ However, this Article has a focus on Bitcoin because Bitcoins currently represent the “world’s most widely used alternative currency”³¹ and are the subject of U.S. government regulatory discussions.³²

D. Bitcoin

Global, digital, and decentralized, Bitcoin is the currency of the Internet.³³ It is a digital currency system created to facilitate Internet commerce by using digital signatures and peer-to-peer technology to curtail the system’s need for trusted third parties, such as financial intermediaries and central banks.³⁴ No government, corporation, or commodity (such as gold) backs this system of currency. In this way, “currency . . . is exactly like religion. It’s based entirely on faith.”³⁵ Bitcoin is no exception.

The model proposed by Bitcoin is in many ways a response to some of the privacy and autonomy concerns surrounding our current financial system. Current money systems now increasingly come with monitoring of financial transactions which blocks financial anonymity.³⁶ Moreover, during the 2008 financial crisis, public confidence in financial institutions plummeted, and many

³⁰ Ian Steadman, *Wary of Bitcoin? A Guide to Some Other Cryptocurrencies*, ARS TECHNICA (May 11, 2013, 6:51 AM), <http://arstechnica.com/business/2013/05/wary-of-bitcoin-a-guide-to-some-other-cryptocurrencies>.

³¹ See, e.g., *In Brief*, COINBASE, <http://www.coinbase.com/about> (last visited May 2, 2015) (“Bitcoin is the world’s most widely used alternative currency with a total market cap of approximately \$5.3 billion. The bitcoin network is made up of thousands of computers run by individuals all over the world.”).

³² See, e.g., I.R.S. Notice 14-21, 2014-16 I.R.B. 938, available at <http://www.irs.gov/pub/irs-drop/n-14-21.pdf>.

³³ Christie Barakat, *Bitcoin: Currency or Commodity?*, ADWEEK.COM (Nov. 29, 2013, 3:57 PM), <http://www.adweek.com/socialtimes/bitcoin-currency-commodity/139043> (quoting the Reddit.com Bitcoin forum, r/Bitcoin, <http://www.reddit.com/r/bitcoin>).

³⁴ Nakamoto, *supra* note 1, at 1.

³⁵ Matthew Yeomans, *The Quest for a Global E-Currency*, CNN.COM (Sept. 28, 1999), <http://www.cnn.com/tech/computing/9909/28/global.e.currency.idg/index.html> (quoting Jack Weatherford, author of *The History of Money*).

³⁶ See Wilcox, *supra* note 11, at 2.

worried about a global financial failure. These turbulent circumstances led many people to fear the failure of government-controlled currencies and seek an alternative.³⁷

In 2009, the enigmatic Satoshi Nakamoto³⁸ effectuated the idea of a pseudonymous currency and developed Bitcoin, the world's first decentralized digital currency. Unlike fiat currencies, whose value is derived through regulation or law and underwritten by the state, Bitcoins have no intrinsic value and their only real value is based on supply and demand—what people are willing to trade for them.³⁹

1. How Cryptocurrency Works: The Bitcoin Example

Bitcoins are electronic files, similar to an mp3 or text file that can also be lost or destroyed.⁴⁰ They are stored either on a personal computer, or can be entrusted to an online service.⁴¹ Since the files are easily stored, they can also be easily sent.⁴² In order to send and accept Bitcoins, all transactions must be logged on a type of

³⁷ For instance, when Cyprus decided to confiscate money from citizens' deposit accounts to battle its growing debt, many turned to Bitcoin. The value of Bitcoin doubled around this time. See Paddy Hirsch, *What Just Happened in Cyprus? An Explainer*, MARKETPLACE (Mar. 25, 2013, 10:40 AM), <http://www.marketplace.org/topics/world/whiteboard/what-just-happened-cyprus-explainer>.

³⁸ "Satoshi Nakamoto" is most likely a pseudonym since his or her identity is unknown. Adrienne Jeffries, *Four Years and \$100 Million Later, Bitcoin's Mysterious Creator Remains Anonymous*, THE VERGE (May 6, 2013, 11:12 AM), <http://www.theverge.com/2013/5/6/4295028/report-satoshi-nakamoto>. Some have suggested that Nakamoto may not be a single person but instead a group of people. See also Benjamin Wallace, *The Rise and Fall of Bitcoin*, WIRED (Nov. 23, 2011, 2:52 PM), http://www.wired.com/magazine/2011/11/mf_Bitcoin/all/1 (indicating that Nakamoto may be a team at Google or the National Security Agency).

³⁹ *Myths*, BITCOIN WIKI, <https://en.Bitcoin.it/wiki/Myths> (last visited May 2, 2015).

⁴⁰ Ogashi Tukafoto, *Bitcoin Mining for Fun and Net Loss*, SLACKATORY (Aug. 4, 2011, 10:00 AM), <http://slackatory.com/2011/08/Bitcoin-mining-fun-loss>.

⁴¹ *Id.*

⁴² *Id.*

public ledger.⁴³ This public ledger is a decentralized network operated and maintained by thousands of personal computers—similar to a peer-to-peer music-sharing service—rather than a central location.⁴⁴ Once another user on the network clears the transaction, the transaction is complete and the Bitcoins are transferred between users.⁴⁵

To secure transactions, Bitcoin relies on public key encryption, a system that uses digital keys to send and receive information.⁴⁶ It utilizes two keys: a public key known to anyone, and a private key known only to the recipient of the message.⁴⁷ The sender encrypts the document with a symmetric key then encrypts the symmetric key with the public key of the receiving computer.⁴⁸ The receiving computer uses its private key to decode the symmetric key.⁴⁹ It then uses the symmetric key to decode the document.⁵⁰ Together, the system then broadcasts all of the transactions associated with each public key to the whole Bitcoin community.⁵¹ A timestamp records the exact time of a transaction to prevent double spending.⁵² Through public key encryption, the Bitcoin system is able to maintain a secure payment system without the need for a third party. Accordingly, users are provided with pseudonymous transactions while still receiving public assurance that the transaction network is functioning and secure.

Bitcoins then enter the market through mining, a processor-intensive process that utilizes specific software.⁵³ Because the

⁴³ Barrett Sheridan, *Bitcoins: Currency of the Geeks*, BLOOMBERG BUSINESSWEEK (June 16, 2011, 5:00 PM), http://www.businessweek.com/magazine/content/11_26/b4234041554873.htm.

⁴⁴ *Id.*

⁴⁵ *Id.*

⁴⁶ *Bitcoin Address*, LEARN CRYPTOGRAPHY, <http://learncryptography.com/bitcoin-addresses> (last visited May 2, 2015).

⁴⁷ *Id.*

⁴⁸ *Id.*

⁴⁹ *Id.*

⁵⁰ *Id.*

⁵¹ Nakamoto, *supra* note 1, at 3.

⁵² *Id.*

⁵³ Mining is the process of adding transaction records to Bitcoin's public ledger of past transactions. This ledger of past transactions is called the blockchain, as it is a chain of blocks. The blockchain serves to confirm

process requires significant computing capacity, software users who mine Bitcoins are rewarded with Bitcoins.⁵⁴ However, the Bitcoin system limits the total number of Bitcoins in existence, which allows for Bitcoin mining.⁵⁵ Currently, Bitcoin miners receive twenty-five Bitcoins as a reward for every block⁵⁶ created, but over time this reward will decrease by fifty percent with every 210,000 created.⁵⁷ This gradual decrease in availability systematically limits the supply of Bitcoins; this ensures there will never be more than 21 million Bitcoins in circulation, which should occur around 2025.⁵⁸ As the supply of Bitcoin is automated, there is no room for a central bank to change the money supply.

In addition to using the mining process to obtain new Bitcoins, it is also possible to obtain Bitcoins from online exchanges, which are subject to the same rules as banks and financial institutions in the United States. Similar to traditional monetary exchange services that allow individuals and businesses to exchange one currency for another, there are online exchanges that allow the exchange of Bitcoin for national and transnational currencies (e.g., dollars, pounds, euros).⁵⁹ Bitcoins can also be purchased directly by finding someone who is willing to exchange Bitcoins for cash, usually done face-to-face and facilitated by websites similar to Craigslist.⁶⁰

transactions to the rest of the network as having taken place. *See How Bitcoin Mining Works*, COINDESK, <http://www.coindesk.com/information/how-Bitcoin-mining-works> (last updated Dec. 22, 2014).

⁵⁴ *Id.*

⁵⁵ COINDESK, *supra* note 53.

⁵⁶ A block is a unit of the code that comprises the blockchain. It is the record of transactions that have occurred since the last block was created and a confirmation of previous transactions. Each block links to the block before it, thus creating a full chain back to the original or “genesis” block. *Blocks*, BITCOIN WIKI, <https://en.Bitcoin.it/wiki/Blocks> (last visited May 2, 2015).

⁵⁷ *Id.*; *see also* COINDESK, *supra* note 53.

⁵⁸ *Controlled Supply*, BITCOIN WIKI, https://en.Bitcoin.it/wiki/Controlled_supply (last visited May 2, 2015).

⁵⁹ *Complete List of Bitcoin Exchanges*, PLANET BITCOIN, <http://planetbtc.com/complete-list-of-Bitcoin-exchanges> (last visited May 2, 2015).

⁶⁰ *See, e.g.*, LOCALBITCOINS.COM, <http://www.localbitcoins.com> (last visited May 2, 2015) (Website description states: “Buy and sell Bitcoins near you.”).

Once a person acquires Bitcoins, there are two main ways to store them: in an online wallet, or on a personal computer or removable media (such as a flash drive).⁶¹ An online wallet allows Bitcoin owners to store their Bitcoins in an online account managed by a third party.⁶² Alternatively, users can store them on their own computers, much like a personal digital wallet.⁶³ Either method carries risks; an online wallet may be subject to hacking, and a personal computer could become infected with a virus, suffer physical damage, or be stolen.⁶⁴ Other cryptocurrencies are functionally and analytically similar to Bitcoin in that they rely on cryptography.⁶⁵

2. Uses and Acceptance of Bitcoin and Other Cryptocurrencies

As with traditional currency, Bitcoin, and cryptocurrency in general, can be transferred in exchange for goods or services. In addition to some physical stores, there are hundreds, if not thousands, of online merchants that accept cryptocurrencies for goods like computer software or clothing, as well as services like graphic design, legal, and consulting services.⁶⁶ Moreover, cryptocurrency offers several unique benefits (or, perhaps, risks) distinct from traditional currency.

First, cryptocurrency dramatically reduces transaction fees. Its

⁶¹ See *Ways to Store Bitcoins*, BITCOIN WIKI, https://en.Bitcoin.it/wiki/Ways_to_store_Bitcoins (last visited May 2, 2015).

⁶² *Id.*

⁶³ *Id.*

⁶⁴ *Id.*

⁶⁵ See *generally Virtual Currency Schemes*, EUROPEAN CENTRAL BANK 21 (Oct. 2012), available at <http://www.ecb.europa.eu/pub/pdf/other/virtualcurrencyschemes201210en.pdf>. However, not all virtual currencies rely on cryptography. *Id.* For example, the online roleplaying game Second Life created by Linden Labs allows players to participate in a virtual economy based on Linden Dollars. Whereas Bitcoin lacks a central monetary authority, Second Life maintains control over its currency through a variety of mechanisms. Players who earn a profit selling virtual land and goods to other plays can convert Linden Dollars into real money. *Id.*

⁶⁶ *Real World Shops*, BITCOIN WIKI, https://en.Bitcoin.it/wiki/real_world_shops (last visited May 2, 2015); *Trade*, BITCOIN WIKI, https://en.Bitcoin.it/wiki/Ways_to_store_Bitcoins (last visited Nov. 1, 2014).

efficiency, gained through eliminating intermediaries, and low cost in comparison to legacy payment tools might be tempting for merchants, individuals, and business-to-business billing.⁶⁷ Bitcoin processors, for instance, charge only one percent to process Bitcoin transactions, compared to the two to three percent often paid by merchants for credit card processing.⁶⁸

Second, the unique benefits cryptocurrency offers are alluring to some users. Using the method described above, it is nearly impossible to create, for example, fraudulent Bitcoins.⁶⁹ They can also be carried, stored, and spent across national borders without a tracking or accountability mechanism.⁷⁰ Many are attracted to this global ease of use and transportability, as well as the elimination of potentially nefarious third parties.⁷¹ Simple convenience is also a relevant factor; Bitcoins can be easily transferred to anyone, anywhere in the world.⁷²

⁶⁷ John Heggstuen, *These Are The Five Main Reasons Bitcoin Is Beginning To Flourish As A Payment Technology*, BUSINESS INSIDER (June 2, 2014, 5:05 PM), <http://www.businessinsider.com/five-main-reasons-bitcoin-is-beginning-to-flourish-as-a-payment-technology-2014-5>.

⁶⁸ *Id.*

⁶⁹ See Joshua Davis, *The Crypto-Currency; Bitcoin and its Mysterious Inventor*, NEW YORKER (Oct. 11, 2011), available at <http://www.newyorker.com/magazine/2011/10/10/the-crypto-currency>.

⁷⁰ Heggstuen, *supra* note 67.

⁷¹ *Id.*

⁷² See generally, Press Release, Department of Justice, Acting Assistant Attorney General Mythili Raman Testifies Before the Senate Committee on Homeland Security and Governmental Affairs (Nov. 8, 2013), available at <http://www.justice.gov/criminal/pr/speeches/2013/crm-speech-131118.html>. Unfortunately, Bitcoin's distinctive factors also make cryptocurrency alluring for criminal purposes. As Attorney General Raman explains, "[S]ome criminals have exploited virtual currency systems because of the ability of those systems to conduct transfers quickly, securely, and often with a perceived higher level of anonymity than that afforded by traditional financial services. The irreversibility of many virtual currency transactions additionally appeals to a variety of criminals seeking to engage in illicit activity, as does their ability to send funds cross-border." Virtual currencies, due primarily to their anonymity, have been linked to facilitation of marketplaces for: assassins, attacks on businesses, exploiting children (including pornography), corporate espionage, counterfeit currencies, drugs, fake IDs and passports, high yield investment schemes (Ponzi schemes and other financial frauds), tax evasion, sexual exploitation, stolen credit cards and credit card numbers, and weapons. See also Laurence Trautman,

Finally, and most importantly, the pseudonymity that cryptocurrency offers appeals to many people.⁷³ Because, for instance, Bitcoins are transferred peer-to-peer without an intermediary, transacting in Bitcoins provides users with high levels of privacy because they remain pseudonymous.⁷⁴ The information recorded during a transaction is the digital address of the Bitcoins, not the user's identity or account information.

Over the past three years, Bitcoin has gradually captured the attention of consumers, retailers, and service providers, and it is now effectively functioning as a currency in the real world.⁷⁵ In fact, Bitcoin has been recognized for legal and tax purposes in Germany, making it the first country to take an official stance on the status of the online currency as "private money."⁷⁶ In the United States, a federal judge ruled that for purposes of securities regulation, Bitcoin is indeed "money."⁷⁷

Even so, it is fair to say that cryptocurrency is not going to cause government-backed currencies to become obsolete. But while the system's virtues, such as pseudonymity and lack of bank fees, may not matter much to the general consumer, it is possible to envision its usefulness in a variety of niche markets.⁷⁸ Where pseudonymity or anonymity is valuable and where persistently high inflation is problematic, it is possible that cryptocurrency could in fact flourish.

Virtual Currencies; Bitcoin & What Now After Liberty Reserve, Silk Road, and Mt. Gox?, 20 RICH. J.L. & TECH. 13 (2014).

⁷³ See Wilcox, *supra* note 11, at 2.

⁷⁴ See FAQ – Bitcoin, *What Are the Advantages of Bitcoin?*, BITCOIN PROJECT, <https://Bitcoin.org/en/faq#what-are-the-advantages-of-bitcoin> (last visited May 2, 2015).

⁷⁵ See, e.g., *The Mysterious World of Bitcoin: Does It Have Staying Power?*, KNOWLEDGE@WHARTON AT WHARTON SCH. U. PA. (Apr. 24, 2013), <http://knowledge.wharton.upenn.edu/article/the-mysterious-world-of-bitcoin-does-it-have-staying-power>.

⁷⁶ *Germany Recognizes Bitcoin as 'Private Money'*, RT (Aug. 18, 2013, 6:13 PM), <http://rt.com/news/bitcoin-germany-recognize-currency-641>.

⁷⁷ Sec. and Exch. Comm'n v. Shavers, No. 4:13-CV-416, 2013 WL 4028182, at *2 (E.D. Tex. Aug. 6, 2013) ("Bitcoin is a currency or a form of money . . .").

⁷⁸ See Trautman, *supra* note 72, at 2.

II. CAMPAIGN FINANCE ENTERS THE AGE OF BITCOIN

The FEC is the latest federal regulatory agency that seemingly legitimized the use of cryptocurrency. After several months of debate, the FEC voted 6-0 to approve Advisory Opinion 2014-02 that allows federal political committees to accept Bitcoin contributions.⁷⁹ While the decision is not considered binding, it may be cited as relevant precedent, and it paves the way for the use of Bitcoins by any federal political committee. The FEC's ruling is significant because it weighs in on a number of questions that touch on the nature of Bitcoins and how they should be valued.⁸⁰

A. Summary of the FEC Advisory Opinion

The FEC decision comes in the form of guidance to the Make Your Laws PAC (MYL PAC). A PAC is a political action committee, a type of organization that pools campaign contributions from members and donates those funds to campaigns for or against candidates, ballot initiatives, or legislation. MYL PAC, a non-connected political committee that registered with the Commission in 2012, wished to accept contributions of up to a total of \$100 in Bitcoins for both its contribution and non-contribution accounts. In its advisory request, MYL PAC proposes to accept Bitcoins only through an online form on which the Bitcoin contributor, regardless of the proposed contribution amount, will have to provide his or her name, physical address, occupation, and employer.⁸¹

The FEC agreed that MYL PAC may accept up to \$100 worth of Bitcoins per election, per contributor. To this point, contributors “should value that contribution based on the market value of Bitcoins at the time the contribution is received.”⁸² If Bitcoin soars in value after the \$100 contribution is received, then bully for the

⁷⁹ *Id.*

⁸⁰ The question of how Bitcoins should be characterized—either as monetary or in-kind contributions—could have implications beyond the fairly narrow confines of election law.

⁸¹ FEC Advisory Opinion, *supra* note 6, at 2.

⁸² *Id.* at 6.

committee. Theoretically, \$100 worth of Bitcoins today could steadily appreciate to \$10,000 worth at the year's end.⁸³ A political committee could then find itself with \$10,000 worth of Bitcoins it could use. The FEC notes that "earnings (or losses) realized upon the sale of any Bitcoins . . . must be reported like other investment earnings or losses."⁸⁴

Moreover, the FEC decided that the sale of Bitcoins, and their conversion into dollars before being used, is legal.⁸⁵ Liquidated Bitcoin must be deposited, in dollar form, into a committee's campaign account within ten days of receiving it.⁸⁶ However, the FEC could not reach an agreement on whether political committees may directly purchase goods and services with Bitcoins. Essentially, the FEC is not authorizing committees to make purchases with actual Bitcoin, but it is not prohibiting them from doing so, either. Since the FEC did not rule on whether committees are allowed to directly spend Bitcoin on goods and services, it states in its ruling, "the Commission is not addressing how such purchases might be reported."⁸⁷ The advisory opinion also provides that purchasing goods or services with Bitcoins that a political committee has purchased with campaign cash is "not permissible under Commission regulations."⁸⁸

Most important in this context, Bitcoin contributions and contributors must be disclosed publicly, regardless of whether Bitcoin users want to remain pseudonymous. The FEC held that all contributors must provide their name, physical address, and employer, affirm that he or she owns the contributed Bitcoins, and that he or she is not a foreign national.⁸⁹

⁸³ See THE BITCOIN VOLATILITY INDEX, <https://btcevol.info> (last visited May 2, 2015). This website tracks the volatility of Bitcoin prices in U.S. dollars.

⁸⁴ FEC Advisory Opinion, *supra* note 6, at 8.

⁸⁵ *Id.* at 3.

⁸⁶ *Id.*

⁸⁷ *Id.* at 9.

⁸⁸ *Id.* at 7.

⁸⁹ *Id.* at 5.

B. How Much Bitcoin Can a PAC Actually Accept?

While the FEC's decision does provide some measure of guidance, it leaves open as many questions as it answers about Bitcoin, and cryptocurrency in general.

The question of whether Bitcoin is a monetary (gift of money) or in-kind (gift of goods or services) contribution is important in this context because if Bitcoins are money, then a political committee may only accept Bitcoin contributions up to \$100, according to federal elections law.⁹⁰ If Bitcoins are in-kind contributions, however, an individual could make a Bitcoin contribution valued up to \$2,600 per election to a federal candidate.⁹¹ The FEC's decision does not indicate whether committees may accept Bitcoin up to the federal limit on campaign contributions. It only addresses acceptance of \$100 worth of Bitcoins, largely because MYL PAC only asked to accept \$100 per election per person. As such, the FEC advisory opinion is narrow because it only responds to a specific question. Despite the opinion's limited scope, the Commissioners still contradicted one another's interpretation of it.

1. The Commissioners' Clash over Bitcoin Campaign Contribution Limits

Although the Commission voted unanimously, the Commissioners seem to disagree on what exactly they voted on. Commissioner Ellen Weintraub told the press that MYL PAC's self-imposed Bitcoin contribution limit of \$100 "was really important to us," and "[b]ecause the Commission only approved the acceptance of Bitcoin as specifically described in the request by Make Your Laws PAC, the decision does not permit contributions of more than \$100."⁹² Chairman Lee Goodman,

⁹⁰ Monetary contributions are limited to \$100 by statute and FEC regulation. See 2 U.S.C. 441g; 11 C.F.R. 110.4(c).

⁹¹ See *Candidate Committees*, FEC, <http://www.fec.gov/rad/candidates/FEC-ReportsAnalysisDivision-CandidateCommittees.shtml> (last visited May 2, 2015).

⁹² Matea Gold, *Federal Election Commission Approved Bitcoin Donations*

however, disagreed. He told the press that “the advisory opinion treats Bitcoin donations as in-kind contributions—not official currency—meaning that the only limits that apply are the federal caps on all forms of accepted donations,”⁹³ and “[t]his advisory opinion in no way established the outer limit.”⁹⁴

Later, the two groups of Commissioners issued separate statements. The three Democratic Commissioners explained that the advisory opinion treats Bitcoins like cash, meaning that Bitcoin contributions must be limited to \$100.⁹⁵ Chairman Goodman (Commissioners Hunter and Petersen did not join this statement) explained that the advisory opinion treats Bitcoins as in-kind contributions, which are not subject to the \$100 limit on cash contributions, and may be accepted in amounts up to the regular contribution limits.⁹⁶ The Commissioners’ divergence is particularly confounding in light of the text of the opinion, which refers to Bitcoin as an in-kind contribution for reporting purposes.⁹⁷ The only analogy to cash appears in the Democratic Commissioners’ separate Statement (“[B]itcoins are most like cash contributions . . .”).⁹⁸

to *Political Action Committees*, WASH. POST (May 8, 2014), <http://www.washingtonpost.com/blogs/post-politics/wp/2014/05/08/federal-election-commission-approves-Bitcoin-donations-to-political-committees>.

⁹³ *Id.* See also FEC, *supra* note 91.

⁹⁴ *Id.*

⁹⁵ *Statement of Democratic Commissioners, supra* note 7, at 1.

⁹⁶ *Statement of Chairman Goodman, supra* note 7, at 1.

⁹⁷ See FEC Advisory Opinion, *supra* note 6, at 8 (“Bitcoins share certain characteristics of contributions governed by two different regulatory reporting provisions: 11 C.F.R. § 104.13(a), which addresses the reporting of most *in-kind contributions*, and 11 C.F.R. § 104.13(b), which addresses the specific reporting of *in-kind contributions* that the committee receives to liquidate in a later reporting period. . . . The initial receipt of Bitcoins as contributions, regardless of subsequent disposition, should be reported like *in-kind contributions* described in 11 C.F.R. § 104.13(a) . . .”) (emphasis added).

⁹⁸ *Statement of Democratic Commissioners, supra* note 7, at 1.

III. IMPLICATIONS OF REGULATORY GUIDANCE ON THE FEDERAL STATUS OF CRYPTOCURRENCY

The FEC advisory opinion has significant implications for Bitcoin, and cryptocurrency more generally, outside the realm of campaign financing. First, the decision may not sit squarely with previous regulatory guidance, which damages the overall cohesion of fiscal regulation. Second, the FEC's treatment of Bitcoin further damages the potential for cryptocurrency to be embraced as a legitimate means of transaction in federal campaign finance.

A. The FEC's Advisory Opinion is Inconsistent with Other Federal Cryptocurrency Regulatory Schemes

Whether Bitcoins are characterized as monetary or in-kind contributions has implications beyond the fairly narrow confines of election law. Their characterization may create inconsistency in other regulatory schemes. Specifically, if the FEC does characterize Bitcoins as in-kind contributions analogous to stocks or commodities, this characterization may be inconsistent with the SEC's view of Bitcoin. For example, in *SEC v. Shavers*, the defendants moved to dismiss the complaint, in which the SEC accused Trendon T. Shavers of operating a Bitcoin-based Ponzi scheme, on the grounds that Bitcoins are not true currency and therefore the investments he solicited and accepted were not "investments of money" subject to federal securities regulation.⁹⁹ The SEC and the federal district court disagreed. In denying the motion, the court found that: "It is clear that Bitcoin can be used as money. It can be used to purchase goods or services Bitcoin is a currency or form of money, and investors wishing to invest in [Shavers' company] provided an investment of money."¹⁰⁰

Bitcoin characterized as an in-kind contribution could also create inconsistencies with the FinCEN March 18, 2013 guidance interpreting the status of virtual currency under the Bank Secrecy Act (B.S.A.) and the anti-money laundering (A.M.L.) rules

⁹⁹ Sec. and Exch. Comm'n v. Shavers, Case No. 4:13-CV-416 (E.D. Tex. Aug. 6, 2013).

¹⁰⁰ *Id.*

adopted under the B.S.A.¹⁰¹ FinCEN found that while decentralized virtual currencies lack legal tender status, they have many of the attributes of currency, and accordingly held that decentralized virtual currency should be treated like legal tender for purposes of A.M.L. regulation.¹⁰² That ruling could be clouded if the FEC advisory opinion is to mean that Bitcoins are not “money” as defined under its regulations.

While any individual federal agency’s guidelines are not binding on other federal agencies considering whether and how to regulate Bitcoins, it may certainly be cited as relevant precedent. An argument can be made that treating Bitcoin differently for different purposes makes sense. For instance, Bitcoin may be more like money than a security in the *Shavers* context, but it may be more like money for the concerns of money laundering and illegal activity. There may be policy advantages, but even so, disjointed opinions regarding the nature of Bitcoin create confusion about how cryptocurrency fits within overall fiscal regulation.

B. Cryptocurrency is Difficult to Reconcile with U.S. Financial Policy

At issue here is not what the Commissioners disagreed on, but on what they unequivocally agreed. The split between the Commissioners highlights a fundamental tension between safeguarding against illicit activity and promoting new, but perhaps risky, technology. Given Bitcoin’s pseudonymous nature, the Democratic Commissioners argue that “contributions of Bitcoins are most like cash contributions,” and regulators must impose strict disclosure requirements on cash because it “offers too facile a medium for unethical and illegal activities” due to “[i]ts untraceability and easy transferability.”¹⁰³ Although Chairman Goodman disagreed that Bitcoins are cash, he still noted the importance of committee requests for identifying information and

¹⁰¹ See *FinCEN Application*, *supra* note 13, at 1.

¹⁰² *Id.*

¹⁰³ *Statement of Democratic Commissioners*, *supra* note 7, at 1 (quoting 120 CONG. REC. 7832 (1974) (statement of Rep. Boland)).

that contributors self-identify.¹⁰⁴

The clearest implication of the FEC's guidance is that there will be no less regulation and scrutiny of entities transacting in Bitcoin and other cryptocurrencies. Despite Bitcoin's commitment to pseudonymity, all donors must list their names, addresses, and occupations before they can donate the digital currency to politicians in the United States. The FEC held that current campaign contribution laws apply, in that "the Commission requires committee treasurers to employ best efforts to obtain, maintain, and publicly report the name, address, occupation, and employer of each contributor who gives more than \$200 in a calendar year."¹⁰⁵ The Commissioners' unanimous agreement here indicates that cryptocurrency will likely not see any less stringent monitoring or disclosure regulation.

Despite this, many believe that the FEC cracked open the door of legal legitimacy in the American political system to cryptocurrency by voting unanimously to allow Bitcoin contributions.¹⁰⁶ After all, regardless of whether it is a cash or in-kind contribution, political committees are allowed to accept Bitcoin donations—the FEC agreed on that much.

Ironically, the FEC decision illustrates the exact opposite conclusion—cryptocurrency does not fit with campaign finance law. In its advisory opinion, FEC nullifies the fundamental precept of cryptocurrency: its pseudonymity. There is no central authority that the FEC can work with to discover the person behind a cryptocurrency transaction. Though everyone on the network can see the blockchain, all they see are public keys, which do not give information on the identity of the person behind that public key. This is the very core of cryptocurrency's functionality. While some users can choose to not be pseudonymous by associating personal data with a public key address, pseudonymity is the assumed default.

¹⁰⁴ *Statement of Chairman Goodman, supra* note 7, at 4.

¹⁰⁵ *Id.* (citing 2 U.S.C. § 432(i); 11 C.F.R. § 102.9(d)).

¹⁰⁶ *See, e.g.,* Matthew Heller, *FEC Decision Pushes Bitcoin Further Toward Legitimacy*, MINT PRESS NEWS (May 19, 2014), <http://www.mintpressnews.com/fec-decision-pushes-bitcoin-toward-legitimacy/190961>.

On the other side, financial transparency is one of the crucial tenets of campaign regulatory law.¹⁰⁷ Indeed, as recently as its 2010 decision in *Citizens United v. Federal Election Commission*, the Supreme Court recognized that campaign finance disclosure is a vital measure to “[enable] the electorate to make informed decisions and give proper weight to different speakers and messages.”¹⁰⁸ By its very nature, cryptocurrency shields its users from financial disclosure. While cryptocurrency has other unique draws in addition to pseudonymity—such as decentralization and low transaction costs—the fact remains that a part of its functionality is at odds with governmental and financial transparency.

The FEC decision follows similar consequences stemming from the U.S. Internal Revenue Service (IRS). In March 2014, the IRS stated that it would treat Bitcoin as a property payment for the purposes of taxation.¹⁰⁹ The guidance also indicates that Bitcoin transactions are subject to the same information reporting and withholding requirements as similar transactions in dollars.¹¹⁰ To the extent that Bitcoin’s success partly depends on its pseudonymity and on avoiding the burden of government regulation, this IRS guidance similarly undermines its unique characteristics.

Accordingly, perhaps the crucial takeaway from the FEC guidance lies not in its Commissioners’ dispute over what Bitcoin is, but rather what Bitcoin cannot be in elections: pseudonymous or anonymous. As such, despite its approval of Bitcoin donations, the FEC opinion is another implicit blow against users’ wish to remain unknown. Ultimately, U.S. fiscal regulations indicate that cryptocurrency is difficult to reconcile with the objective of financial disclosure and transparency.

¹⁰⁷ Wilcox, *supra* note 11, at 2. Also, famously, former Supreme Court Justice Louis Brandeis stated: “[S]unlight is . . . the best of disinfectants” for government. Louis D. Brandeis, *What Publicity Can Do*, OTHER PEOPLE’S MONEY AND HOW THE BANKERS USE IT 62 (Nat’l Home Library Found. 1933) (1914)).

¹⁰⁸ *Citizens United v. Fed. Election Comm’n*, 558 U.S. 310, 371 (2010).

¹⁰⁹ I.R.S. Notice 14-21, 2014-16 I.R.B. 938, *available at* <http://www.irs.gov/pub/irs-drop/n-14-21.pdf>.

¹¹⁰ *Id.*

CONCLUSION

While alternate currencies have offered some respite for those who desire some control in their financial medium, alternative currencies have still been controlled by a central authority and have generally been limited to a specific geographic area. Cryptocurrency, however, is a unique confluence of technology and demand, which allows it to function as a global, decentralized, alternative currency. The growing adoption of cryptocurrency indicates that it is here to stay. The pseudonymous and decentralized features that are widely praised in cryptocurrency are also regulators' largest concern with it. While the currency does have legitimate uses, it has gained notoriety from enabling illicit transactions. As a result, governmental agencies are taking note. On the whole, the FEC ruling is both an acknowledgment of cryptocurrency's growing popularity and a move to undermine its unique features.

TRAVELERS BEWARE: TORT LIABILITY IN THE
SHARING ECONOMY

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ABSTRACT

Participation in the sharing economy makes consumers' lives easier. From the rental of a house or room via room share sites like Airbnb to getting a ride around the city using rideshare apps such as Uber and Lyft, travelers have found less traditional and more affordable ways to explore. With these innovations, however, come risks for users. For example, Airbnb hosts do not owe guests the same duties as a hotel operator. Additionally, drivers' insurance policies may not apply when operating for profit through a rideshare program. This Article examines the current liability issues that arise in the sharing economy. The law lacks clear, uniform guidance, as each city and state chooses to treat these companies differently. Because of this, sharing economy participants must be aware of the potential liability faced in a rapidly growing economy where the law is playing catch-up.

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INTRODUCTION

Taxi rides can be expensive. The same is true of hotel rooms for a weekend getaway. Consumers need more affordable options. This is where the new “sharing economy” enters into the picture. The sharing economy is an offspring of the peer-to-peer business model that has grown in importance in recent years.¹ Owners can make better use out of their underused belongings by renting them out or “sharing” them with others via the Internet. And now, with the widespread use of smartphones, consumers are able to quickly obtain the services they need with a touch of a button. The sharing

¹ *Peer-to-Peer Rental: The Rise of the Sharing Economy*, THE ECONOMIST (Mar. 9, 2013), <http://www.economist.com/news/leaders/21573104-internet-everything-hire-rise-sharing-economy>.

economy has proven to be very useful for travelers. Many travelers use Airbnb, a website where one can book accommodations around the world through a community marketplace.² Someone who has an extra bedroom in his or her house can rent that room out to a traveler. Some Airbnb hosts even rent out whole houses or condos to vacationers. Ridesharing is another form of this “collaborative consumption”³ that allows for easy travel around cities. A smartphone application (“app”) connects drivers to travelers in need of a ride. Ridesharing is often a less expensive alternative to a taxi ride. As with any new innovation, laws are put to the test by the challenges that arise from these sharing business models. The current legal framework is playing catch-up with this rapidly growing economy, and companies with sharing business models have started to face more outside regulation. As the sharing economy grows, it has become clear that hosts and drivers are at a higher legal risk than those purchasing their services. Thus, hosts must understand the law in their jurisdictions before renting out through Airbnb, and Uber and Lyft drivers must be aware of the extent to which their personal insurance covers passengers in their cars.

I. AIRBNB HOSTS PROBABLY ARE NOT CONSIDERED INNKEEPERS AND OWE NO SUBSTANTIAL DUTY TO GUESTS

One would logically think of Airbnb hosts as akin to an innkeeper or hotel manager. However, the law has surprisingly not recognized them in that way. In the summer of 2014, a woman rented out her Palm Springs, California condo using Airbnb’s website.⁴ Little did she know, a few weeks later she would legally be considered a landlord.⁵ Under California law, after a person

² *About Us*, AIRBNB, <https://www.airbnb.com/about/about-us> (last visited Nov. 7, 2014).

³ THE ECONOMIST, *supra* note 1.

⁴ Skip Descant, *Airbnb ‘Squatter’ Checks Out of Palm Springs Condo*, USA TODAY (Aug. 21, 2014, 1:05 AM), <http://www.usatoday.com/story/news/nation/2014/08/21/airbnb-squatter-leaves-condo/14375429>.

⁵ Joshua Brustein, *The Lesson of the Airbnb Squatter: We’re All Landlords Now*, BLOOMBERG BUSINESS (July 22, 2014), <http://www.businessweek.com/articles/2014-07-22/an-airbnb-guest-who-refuses-to-leave>.

resides somewhere for thirty days, that person obtains a whole host of tenant protections.⁶ The “landlord” of the condo eventually was able to evict her “tenants.”⁷ More generally, the incident exemplifies how the law is falling behind the realities of the sharing economy.

A. Innkeepers Owe a Greater Duty to Guests than Hosts Do

The duty owed to guests in a hotel is grounded in the common law.⁸ At common law, innkeepers are strictly liable for injury to guests⁹ and have a duty to accommodate, a duty to render courteous treatment, a duty to provide safe accommodations, and a duty to protect guests from others.¹⁰ The obligations for innkeepers under common law are higher than the duty that an average person owes to a social guest in her home. Innkeepers, and people who run hotels, still face many of the same liabilities, just in a modernized form.¹¹ This duty of care stems from a special relationship that exists between an innkeeper and guest.¹² Additionally, The Second Restatement of Torts¹³ equates innkeepers with common carriers, which imposes on them a

⁶ CAL. CIV. CODE § 1940(a) (West 2015); CAL. CIV. CODE § 1940.1(a) (West 2015).

⁷ Descant, *supra* note 4.

⁸ See *Corinaldi v. Columbia Courtyard, Inc.*, 873 A.2d 483, 490–91 (Md. Ct. Spec. App. 2005).

⁹ *Id.*

¹⁰ THOMAS A. DICKERSON, TRAVEL LAW § 4.04 (2014).

¹¹ *Id.*

¹² NORMAN J. LANDAU & EDWARD C. MARTIN, PREMISES LIABILITY LAW AND PRACTICE § 4.03, at 1–4 (perm. ed., rev. vol. 2011).

¹³ The Restatement (Second) of Torts provides in part that:

(1) A common carrier is under a duty to its passengers to take reasonable action

(a) to protect them against unreasonable risk of physical harm, and

(b) to give them first aid after it knows it has reason to know that they are ill or injured, and to care for them until they can be cared for by others.

(2) An innkeeper is under a similar duty to his guests.

RESTATEMENT (SECOND) OF TORTS § 314A (1965).

collection of duties to protect guests.¹⁴ The duties modern day innkeepers face include premises liability, a warranty of habitability, and liability for failure to warn of known dangers.¹⁵

Premises liability involves the liability of a property owner for defects that the owner knew or should have known about on his or her property.¹⁶ A warranty of habitability is assumed upon innkeepers, as well as landlords, and is implied by renting out the property. The liability for failure to warn of known dangers falls under premises liability as well. So, if Airbnb hosts were considered innkeepers, they could be held liable for guest injuries that occurred on the property as a result of a property defect. Additionally, Airbnb, as somewhat of an employer of the host, could also have a duty to protect guests from harm through a basic agency theory of vicarious liability. This theory is derived from the doctrine of *respondeat superior* which holds an employer liable for an employee's wrongful acts.¹⁷

On the other hand, guests could be deemed "gratuitous licensees,"¹⁸ which would give rise to a different kind of relationship in which a lower duty is owed by the host.¹⁹ Gratuitous licensees are people who have been given express permission by the landowner to be on the premises and nothing more.²⁰ However, as cases that involve Airbnb hosts begin to come before the courts, they have not considered Airbnb hosts to be innkeepers or even mere property owners inviting guests into their house.²¹ Thus, an Airbnb lodger would not be considered a guest or even gratuitous licensee.

¹⁴ *Id.*

¹⁵ DICKERSON, *supra* note 10.

¹⁶ W.E. Shipley, Annotation, *Liability for Injury to Guest in Home or Similar Premises*, 25 A.L.R.2d 598, § 6(d) (2015).

¹⁷ BLACK'S LAW DICTIONARY 1426 (9th ed. 2009).

¹⁸ RESTATEMENT (SECOND) OF TORTS § 330 (1965).

¹⁹ Shipley, *supra* note 16, at § 3.

²⁰ RESTATEMENT (SECOND) OF TORTS § 330 (1965).

²¹ *Airbnb, Inc. v. Schneiderman*, 44 Misc. 3d 351, 358 (N.Y. Sup. Ct. 2014).

B. Airbnb Hosts May Be Considered Landlords

Some jurisdictions treat Airbnb hosts as landlords instead of innkeepers or mere property owners granting gratuitous licenses. This concept seems somewhat counterintuitive because Airbnb guests are more analogous to a hotel guest or a mere licensee, rather than a tenant who holds some interest in the property.²² However, California allows for tenant rights after a thirty day stay.²³ New York courts have held that hosts in Airbnb room shares are indeed landlords, and if the property is zoned for permanent residences, landowners are not legally allowed to rent out through Airbnb or similar room sharing companies.²⁴ Recently a New York court enjoined owners of a company that rented out apartments using a room share method from renting out rooms, and the court referred to them as landlords, not innkeepers.²⁵

Despite the burdens of being deemed a landlord, there are also benefits. If Airbnb hosts are considered landlords rather than innkeepers, they will not be held strictly liable for many injuries that occur on their property. They also will not have a duty to protect guests. Landlords usually are not held liable for injuries on their premises unless the injury is the result of not conforming to proper safety codes.²⁶ Landlords owe a lower duty to tenants staying on their property from many of the types of injuries and dangers that might be faced by short-term guests. For example, landlords usually only owe a duty to the tenant to properly maintain the premises so as to make the residence safe to live in.²⁷ In the end, it probably helps Airbnb hosts more than harms them to be considered landlords because of the lower duty owed by

²² The difference between a guest and a tenant is that, “a tenant receives an estate in land. Whereas, a hotel guest has a bare right to use. The guest is a mere licensee.” *In re Ashkenazy Enters., Inc.*, 94 B.R. 645, 647 (Bankr. C.D. Cal. 1986).

²³ CAL. CIV. CODE § 1940(a) (West 2015); CAL. CIV. CODE § 1940.1(a) (West 2015).

²⁴ *Schneiderman*, 44 Misc. 3d at 356.

²⁵ *City of N.Y. v. Smart Apartments LLC*, 39 Misc. 3d 221, 223 (N.Y. Sup. Ct. 2013).

²⁶ *See, e.g.*, WASH. REV. CODE ANN. § 59.18.060 (West 2013).

²⁷ UNIF. RESIDENTIAL LANDLORD AND TENANT ACT § 2 (1972).

landlords to tenants. With that said, it is not advantageous for the “tenants” because it requires them to be more cautious travelers.

C. Airbnb Is Not Liable As a Travel Agent

In case something does happen, property owners who rent out their property through Airbnb should not expect the company to assume liability for anything that occurs on the premises. Airbnb’s website reads: “By using the Site, Application or Services, you agree that any legal remedy or liability that you seek to obtain for actions or omissions of other Members or third parties will be limited to a claim against the particular Members or other third parties who caused you harm.”²⁸ This waiver of liability is probably completely within Airbnb’s rights because, in a way, Airbnb’s role in facilitating the rental of rooms is quite similar to the role of a travel agent. Travel agents and travel agency websites are not generally liable for any negligence or dangerous conditions of the third-party hotels or travel operators they work with.²⁹ So, if Airbnb is considered nothing more than a travel agency, then all liability for anything that happens on the premises goes to the Airbnb host. Airbnb would thus owe no duty to guests. Even if Airbnb hosts only owe the same duty to guests as that of a landlord to a tenant, injuries occurring on the property as the result of defect are unlikely to find recourse through Airbnb. Instead, injured guests would have to seek compensation from the host.

II. RIDESHARE PASSENGERS ARE NOT COVERED BY PERSONAL DRIVERS INSURANCE

Not only can travelers save money by renting a room directly from the owner through Airbnb, but they can also save money on travel in the city through the use of rideshare services like Uber

²⁸ *Terms of Service*, AIRBNB, <https://www.airbnb.com/terms> (last visited Oct. 2, 2014).

²⁹ *Hofer v. Gap, Inc.*, 516 F. Supp. 2d 161, 180 (D. Mass. 2007); *see also* *Gabrielle v. Allegro Resorts Hotels*, 210 F. Supp. 2d 62, 72 (D.R.I. 2002); *Passero v. DHC Hotels and Resorts, Inc.*, 981 F. Supp. 742, 746 (D. Conn. 1996).

and Lyft. Ridesharing through transportation networking companies has become an extremely popular way to get around cities. A traveler simply needs to download the application to a smartphone, then “request a ride with the tap of a button and get picked up by a reliable community driver within minutes.”³⁰ For many travelers, this service is a great alternative to a costly taxi ride. However, recent accidents involving rideshare drivers have exposed deficiencies in the law and concern with insurance coverage.³¹

A. Rideshares Are Not Typically Covered by Personal Insurance

Rideshare drivers operate their own vehicles. This means that, unless the companies provide insurance, drivers operate under the coverage of their personal insurance policies.

State laws require drivers to have personal insurance to cover liability in the case of an accident, and there are often many insurance plans for drivers to choose from. As with most forms of insurance, the insurer defines the terms under which it will assume liability, subject to state limitations.³²

Commercial auto insurance covers drivers when they are driving for business purposes.³³ Businesses take out insurance plans to cover their liability in case an employed driver causes an accident.³⁴ When Uber and Lyft first began, they provided minimal to no insurance coverage for their drivers, meaning that in most cases drivers were forced to rely on their personal insurance plans.

³⁰ LYFT, <https://www.lyft.com> (last visited Nov. 7, 2014).

³¹ Associated Press, *Uber Sued for Wrongful Death of 6-Year-Old Girl*, USA TODAY (Jan. 28, 2014), <http://www.usatoday.com/story/tech/2014/01/28/uber-wrongful-death-lawsuit/4959127>.

³² David P. Van Knapp, Annotation, *What Constitutes “Private Passenger Automobile” in Insurance Policy Provisions Defining Risks Covered or Excepted*, 11 A.L.R.4th 475, § 2[a] (2015).

³³ *Who Needs Commercial Auto Insurance*, DMV.ORG, <http://www.dmv.org/insurance/who-needs-commercial-auto-insurance.php> (last visited May 4, 2015).

³⁴ *Id.*

1. Rideshare Passengers Are Not Covered by Guest Statutes

In many states, a rideshare passenger is not considered a guest in the car, and thus the driver and the driver's insurer are not liable for any injury to or death of the passenger.³⁵ Guest statutes place liability on the driver if the passenger incurs injury due to the driver's negligence. Both Washington State³⁶ and Oregon³⁷ have explicitly denied rideshare passengers coverage by their guest statutes. These decisions suggest that the driver's personal insurance, unless the plan states otherwise, would not likely cover an injury to a rideshare passenger, even though it would extend to a normal guest in the vehicle.

2. A Vehicle Used for Commercial Purposes Is Not a Private Passenger Vehicle

The insurance a typical driver carries is in place to cover a private passenger vehicle; the insurance covers a vehicle used for normal personal purposes but not for commercial purposes. Therefore, a vehicle used for commercial purposes is not considered to be a private passenger vehicle.³⁸ Private passenger vehicles have a different type of insurance than commercial vehicles, and once a private vehicle is used for commercial purposes, most policies will no longer assume liability for injury to passengers.³⁹ It is likely that if the driver only has personal insurance, the coverage does not apply if the driver is accepting money or another form of benefit in exchange for the ride.

If a driver is driving on behalf of a company like Uber or Lyft, he or she enters the realm of commercial purposes. So, if the driver's insurance does not cover injuries sustained by passengers

³⁵ A.S. Klein, Annotation, *Automobile Guest Statute: Status of Rider as Affected by Payment, Amount of Which is not Determined by Expenses Incurred*, 39 A.L.R.3d 1177, § 1(a) (2015).

³⁶ *Coerver v. Haab*, 161 P.2d 194 (Wash. 1945).

³⁷ *Scott v. Bothwell*, 412 P.2d 14 (Or. 1966).

³⁸ Van Knapp, *supra* note 32, at 9.

³⁹ G.H. Fischer, Annotation, *Construction of Clause of Automobile Liability Excluding Coverage in Case of "Commercial" Use*, 18 A.L.R.2d 719, § 1 (2015).

or others involved during an accident that were caused by the driver, then perhaps Uber or Lyft should be held liable under a theory of vicarious liability. But Uber has refused to assume liability for the death of a six-year-old girl who was struck by an Uber driver while logged into the app and available for customer pick-up in San Francisco.⁴⁰ Uber has claimed that, because the driver did not have anyone in the vehicle, it is not liable for the death of the little girl.⁴¹ Stories like this and many others have spurred legislative bodies into action in jurisdictions where these companies operate.

B. Legislatures Have Begun to Regulate Ridesharing Companies

Rideshare passengers are not considered guests in a vehicle, and thus cannot be covered under personal insurance. Additionally, personal insurance very likely does not cover a driver when giving a ride through a rideshare service. For these reasons, lawmakers are beginning to respond to this issue before more are injured without recourse.

1. Taxi Companies Push to Regulate Ridesharing

A large contribution to lawmakers' awareness of the problems rideshare companies may create is due to complaints from taxi companies. Taxi companies have an obvious financial motive in bringing claims against rideshare companies, but there are other issues with ridesharing that have also been brought to light. Around the country, taxi companies are filing lawsuits against rideshare companies like Uber and Lyft, mostly claiming that the companies are unlawfully functioning as taxi companies.⁴² Taxi companies in Connecticut complained that Uber and Lyft's

⁴⁰ Associated Press, *supra* note 31.

⁴¹ *Id.*

⁴² See *Boston Cab Dispatch, Inc. v. Uber Techs., Inc.*, No. 13-CV-10769-NMG, 2014 U.S. Dist. LEXIS 42068 (D. Mass. Feb. 28, 2014); see also *Taxicab Paratransit Assoc. of Cal. v. Pub. Util. Comm'n*, No. S218427, 2014 Cal. LEXIS 8000 (Cal. June 6, 2014); see *Yellow Group LLC v. Uber Techs. Inc.*, No. 12-C-7967, 2014 U.S. Dist. LEXIS 94093 (N.D. Ill. July 10, 2014).

requirements for their drivers' insurance policies fall short of the requirements that states have for commercial automobile insurance.⁴³ Taxi drivers have stricter requirements for licensing, while rideshare drivers only need to have a car and basic drivers license.⁴⁴ The frustration from taxi companies and drivers is understandable, but currently they have not been provided with much recourse from the courts.⁴⁵

2. New Laws

Although the courts are not providing many answers for the taxi companies, legislatures have stepped up to begin regulation of ridesharing. The complaints by taxis, as well as concerns of citizens, have resulted in many cities and states developing laws that will require rideshare companies to provide insurance to their drivers. California, in large part as a response to the six-year-old killed in San Francisco, now requires rideshare companies to have specified insurance policies.⁴⁶ Seattle is following in California's footsteps.⁴⁷ In response to these new laws, Uber has increased its insurance coverage for drivers.⁴⁸ Prior to this change in July 2014, Uber only covered collision reimbursement.⁴⁹ Lyft also has a \$1 million liability insurance policy in place now.⁵⁰ However, these

⁴³ Andrew Westney, *Uber, Lyft Sideswiped by Conn. Cabbies' Suit*, LAW360 (May 22, 2014), <http://www.law360.com/articles/540330/uber-lyft-sideswiped-by-conn-cabbies-suit>.

⁴⁴ Paul Stephen Dempsey, *Taxi Industry Regulation, Deregulation & Reregulation: The Paradox of Market Failure*, 24 TRANSP. L.J. 73, 78 (1996).

⁴⁵ *Yellow Group LLC v. Uber Techs. Inc.*, No. 12-C-7967, 2014 U.S. Dist. LEXIS 94093, *26–27 (N.D. Ill. July 10, 2014).

⁴⁶ Act to Add Article 7 (Commencing with Section 5430) to Chapter 8 of Division 2 of the Public Utilities Code, Relating to Transportation, ch. 389, 2014 Cal. Stat. 89, § 5443(a) (2014) (codified as amended at Ann. Cal. Pub. Util. Code § 5443 (West 2015)).

⁴⁷ Alexa Vaughn, *Uber, Lyft Expanding Driver Insurance Coverage*, SEATTLE TIMES (Mar. 14, 2014), http://seattletimes.com/html/localnews/2023125386_uberinsurancexml.html.

⁴⁸ Nairi, *Insurance for UberX with Ridesharing*, UBER BLOG (Feb. 10, 2014), <http://blog.uber.com/ridesharinginsurance>.

⁴⁹ *Id.*

⁵⁰ Lyft Insurance Protection Plan, LYFT, <https://www.lyft.com/safety> (last

policies are all contingent upon the timeline, according to records kept by the app. Just because a driver has the app on, coverage is not necessarily in effect. Additionally, many of Uber's conditions rely upon what the driver's personal insurance covers.⁵¹ Although Lyft and Uber are providing insurance coverage to their drivers, it is important that drivers be aware that coverage provided by the company is only in effect when rideshare passengers are in the vehicle and on the way to pick them up. The insurance is not in effect at all times the app is on and drivers are available for pick-up, and if the driver is operating on behalf of Uber or Lyft at that time, their personal insurance may not provide coverage either. So, there is a potential gap in coverage from the post drop-off time until the driver is en route to pick up another passenger.

Recently, Uber recognized and responded to this gap in insurance.⁵² Uber is currently working with insurance companies to create plans that are specifically for rideshare drivers.⁵³ Farmers Insurance and USAA now provide endorsements to preexisting insurance plans for rideshare drivers in Colorado, and a company called Metromile provides a rideshare insurance product for drivers in Washington, Illinois, and California.⁵⁴

Additionally, other laws not actually aimed at regulating rideshares are effectively doing so. For instance, in many jurisdictions driving while using a cell phone can result in drivers being ticketed. Rideshare drivers are often required to use their smartphones while operating a vehicle, thus violating laws to reduce distracted driving in many states. Operating on behalf of a rideshare company does not mean they are immune to those regulations. Some states, like Nevada, have used this as further support for refusal to allow the companies to operate.⁵⁵ Nevada, as well as eighteen other states, prohibits all drivers from using a

visited Nov. 7, 2014).

⁵¹ Nairi, *supra* note 48.

⁵² Eva, *Innovation Within the Insurance Industry*, UBER BLOG (Jan. 28, 2015), <http://blog.uber.com/insuranceinnovation>.

⁵³ *Id.*

⁵⁴ *Id.*

⁵⁵ Belinda Robinson, *Uber Banned in Nevada over Passenger Safety Fears*, DAILY MAIL ONLINE (Nov. 27, 2014), <http://www.dailymail.co.uk/news/article-2851697/Ridesharing-firm-Uber-suspends-operations-Nevada.html>.

handheld cell phone while driving.⁵⁶ In order to avoid being pulled over, drivers must use hands-free devices to talk on the phone.⁵⁷ Additionally, forty-six states have made it illegal to text while driving.⁵⁸ Rideshare drivers should be aware that using the app while driving is illegal in many jurisdictions and may give rise to further financial liability in the case of an accident. Furthermore, in some jurisdictions if drivers use a handheld phone and subsequently cause a car accident, they could face criminal penalties.⁵⁹ Although this aspect of ridesharing is not currently at the forefront of new rideshare legislation, these laws could become a consideration moving forward.

CONCLUSION

The sharing economy does provide value to consumers. But the concerns in the area of tort liability mean the law needs to play catch-up with the rapidly changing economy. Airbnb hosts have a lower than expected duty to their guests since they are not being considered innkeepers, but for right now they must be aware of the local landlord tenant law since guests are not considered licensees either. In addition, although participants in cities with rideshare insurance regulations are likely more protected than in cities without them, drivers must be cautious as the insurance policies do not provide liability at all times.

PRACTICE POINTERS

- When renting out property through Airbnb, liability for any occurrence on the property rests with the owner. Guests should be advised that hosts are unlikely to be held liable for any injury sustained on the property.

⁵⁶ *Distracted Driving Laws*, GOVERNORS HIGHWAY SAFETY ASS'N (June 2015), http://www.ghsa.org/html/stateinfo/laws/cellphone_laws.html.

⁵⁷ Alexis M. Farris, Note, *LOL? Texting While Driving is No Laughing Matter: Proposing a Coordinated Response to Curb this Dangerous Activity*, 36 WASH. U. J.L. & POL'Y 233, 243, 2011.

⁵⁸ GOVERNOR'S HIGHWAY SAFETY ASS'N, *supra* note 56.

⁵⁹ Farris, *supra* note 57.

- An Airbnb host owes the same duty of care to a guest as a landlord does to a tenant.
- Uber and Lyft provide insurance for their drivers when they have a passenger or are en route to pick one up, but drivers should be aware of the limitations of their personal insurance and the extent to which liability will be covered when they simply have the app activated.
- Insurance companies are developing plans specifically for rideshare drivers.

DRONE DRAIN: HOW THE FAA CAN AVOID DRAINING
(AND INSTEAD SPUR) THE AMERICAN DRONE INDUSTRY BY
ADDING NUANCE TO ITS DRAFT SMALL UAS RULES

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ABSTRACT

The Federal Aviation Administration has done much right in the past few months with its draft small UAS rules, but should add nuance to the draft to avoid draining America's nascent drone industry. This Article, which was submitted as an official comment to the FAA by the University of Washington's world-renowned College of Engineering, recommends five essential modifications to enable American competitiveness in this field. First, the FAA should maintain the line-of-sight requirement as a baseline, but allow uses beyond line-of-sight for pilots and aircraft certified to fly with First-Person View or autonomous technology. Second, the FAA should create exceptions to the largely sensible 500-foot ceiling for Small UAS flight, particularly in areas with few low-flying passenger aircraft, and adopt a licensing and certification process for advanced pilots and drones to fly above 500 feet. Third, the FAA should adopt proposed, more relaxed rules for Micro UAS weighing less than 4.4 pounds because different drones present different risks and so should be regulated differently. Fourth, the FAA should adopt an enabling philosophy toward drones, acknowledging that

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their immense economic potential justifies taking manageable safety risks. Fifth, the FAA should actively grant exemptions to the civil ban in the interim of permanent rules, testing drones in society and allowing the FAA to hone the draft rules before they are made permanent in 2017. If the FAA implements these recommendations, it will provide America's emerging drone industry the breathing room to innovative, grow, and compete on the global stage.

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INTRODUCTION

Facing the fast-paced development of unmanned aerial systems (UAS) technology, Congress passed the Federal Aviation Administration Modernization and Reform Act of 2012 (FMRA) to

require the FAA to integrate UAS into domestic airspace by September 30, 2015.¹ The FAA has been slow to act though; it appears that permanent rules will not be forthcoming until 2017, at the earliest.² Meanwhile, the interim ban on non-recreational, civil drone flights will remain in effect, disadvantaging the United States' drone industry against global competition.³ While the FAA submitted more moderate draft rules than many feared, it has a responsibility to listen to the voices of its constituents, improve its draft, and fully enable research and commercial applications in this field.⁴

The current draft small UAS rules do not fully enable American drone research and commercialization. To summarize, the draft rules require that non-recreational, civil Small UAS must stay within "line of sight" of the operator; remain under 500 feet; weigh less than 55 pounds, inclusive of any payload; not exceed 100 miles per hour; not fly over people or populated areas, unless a Micro UAS (under 4.4 pounds); only fly in daylight and conditions with 3-mile visibility; and not fly in class A airspace and get permission for class B, C, D, and E airspace. In addition, operators must pass a knowledge test at an FAA-approved center; obtain a UAS operator certificate; make drones available for testing upon request; report accidents causing injury or damage within ten days; keep their UAS in safe condition and inspect pre-flight; register their UAS with the FAA; and mark their UAS for identification.⁵

Most of these draft rules are sensible and encouraging, which is why the public reaction has generally been welcoming (the

¹ FAA Modernization and Reform Act of 2012, Pub. L. No. 112-95, 126 Stat. 11.

² Brian Fung, *The FAA Won't Make Up its Mind on Drone Rules Until 2017 – At the Earliest*, WASH. POST (Dec. 10, 2014), <http://www.washingtonpost.com/blogs/the-switch/wp/2014/12/10/the-faa-wont-make-up-its-mind-on-drone-rules-until-2017-at-the-earliest>.

³ Patrick McKay, *FOIA Response Reveals FAA Routinely Misrepresents the Law Regarding Unmanned Aircraft*, DIY DRONES (Feb. 4, 2014), <http://diydrone.com/m/blogpost?id=705844%3ABlogPost%3A1551726>.

⁴ *DOT and FAA Propose New Rules for Small Unmanned Aircraft Systems*, FED. AVIATION ADMIN. (Feb. 15, 2015), http://www.faa.gov/news/press_releases/news_story.cfm?newsId=18295.

⁵ *Id.*

Association for Unmanned Vehicle Systems even called them a “good first step”⁶). Yet, these rules will still prove overburdensome in relation to the risks. They will needlessly constrain many of the operations of researchers like those at University of Washington and at companies like Amazon. The FAA should, therefore, soften its draft Small UAS Rules in the five ways discussed below.

I. KEEP THE LINE-OF-SIGHT REQUIREMENT AS A BASELINE, BUT ALLOW CERTIFIED DRONES AND PILOTS TO FLY BEYOND

The FAA should not require that *all* civil drone operators keep their drones within line of sight while flying. While this may be a sensible baseline requirement, the FAA should allow drones to fly outside of line of sight if pilots and drones are certified to operate with First-Person View (FPV) technology or autonomous onboard Visual and Inertial (VI) sensing technology. These technologies can provide a level of situational awareness similar to that of a manned aircraft operating in similar conditions.

A. *Commercial Benefits and Emerging Technology*

The FAA must understand that many (if not most) of the commercial and scientific benefits of drone flight will be achieved outside of the operator’s direct line of sight. Such uses include surveying crops, pipelines, oceans, and forests, as well as delivering products and medical supplies, performing dangerous jobs, and providing emergency services like search and rescue. The benefits to farming, in particular, are immense. The Association for Unmanned Vehicle Systems International estimates drones will contribute more than \$75 billion to the U.S. agriculture industry in the first decade of its commercial use.⁷ The line-of-sight

⁶ *The Tethers Loosen*, ECONOMIST (Feb. 21, 2015), <http://www.economist.com/news/business/21644153-americas-new-rules-drones-will-keep-some-businesses-grounded-tethers-loosen>.

⁷ Mark Koba, *American Farmers to FAA: Hey, We Want Drones!*, NBC NEWS (Dec. 12, 2014), <http://www.nbcnews.com/tech/innovation/american-farmers-faa-hey-we-want-drones-n222296>.

requirement would cut off a substantial portion of these benefits. To do so without a compelling safety rationale would be an overstep, particularly when existing and emerging technologies are capable of adequately minimizing the risks.

FPV goggles are highly advanced today. The best versions can give an operator a high-definition, 140-degree, real-time view from a drone.⁸ This technology can enable exceptionally accurate flying with both copters and fixed-wing UAS.⁹ Companies such as FatShark and SkyZone sell high-quality FPV goggles and drone camera systems around the world at a relatively low cost of \$300–\$500.¹⁰ This already advanced technology is evolving rapidly. The technology behind immersive virtual reality headsets such as Facebook's Oculus and Microsoft's HoloLens will converge with drone FPV technology to greatly improve the safety of navigation.¹¹

B. Field-of-View Concerns and Solutions

One of the FAA's concerns with FPV technology is the field of view, which it argues is too limited and less capable than a human pilot of spotting surrounding aircraft and hazards. Yet, current camera technologies such as 1080p high-definition fish-eye video actually offer a wider field of vision than the human eye (up to 140 degrees).¹² Advances on this technology, along the lines of virtual reality headsets, will allow an operator to rotate his or her head to turn the on-board camera and look for surrounding aircraft or hazards. This technology will provide drone operators with

⁸ *First-Person View*, WIKIPEDIA, [http://en.wikipedia.org/wiki/First-person_view_\(radio_control\)](http://en.wikipedia.org/wiki/First-person_view_(radio_control)) (last visited Jun. 12, 2015).

⁹ Andberge, *Best FPV Moments of 2013*, YOUTUBE (DEC. 1, 2013), <https://www.youtube.com/watch?v=HrSEyS-GpZs> (last visited Apr. 20, 2015).

¹⁰ *FatShark Teleporter V3*, AMAZON.COM, <http://www.amazon.com/Fat-Shark-FATSHARK-TELEPORTER-GOGGLES/dp/B0012LWAD4> (last visited Apr. 18, 2015).

¹¹ *First-Person View*, WIKIPEDIA, [http://en.wikipedia.org/wiki/First-person_view_\(radio_control\)](http://en.wikipedia.org/wiki/First-person_view_(radio_control)) (last visited Dec. 12, 2014).

¹² Neil Hughes, *Using the DJI Phantom 2 Vision+ Camera*, APPLE INSIDER (Aug. 3, 2014), <http://appleinsider.com/articles/14/08/03/review-using-the-dji-phantom-2-vision-camera-drone-with-apples-iphone>.

virtually identical range of vision to that of a pilot in a cockpit.

The application of multiple cameras on a drone for front, rear, side, above, and below views could also provide a far superior range of vision than that of a human pilot. Not only is current FPV technology likely capable of minimizing the risks associated with flight outside of human line of sight, but the next generation of FPV technology will almost certainly be adequate to do so.

The FAA's primary concern regarding limited field of vision is, moreover, largely addressed by requiring that drones fly under 500 feet. The Agency worries that drone operators will not see oncoming *passenger aircraft*, thus risking catastrophic collisions. Yet passenger aircraft are generally required to fly above 500 feet. Thus, requiring that UAS fly below this threshold should adequately minimize the risk of unwanted encounters.

Autonomous sensing technology, whether alone or in combination with FPV technology, can also adequately minimize the risks of drone flight outside the operator's line of sight. Sensors combined with software can allow drones to travel from point A to point B, avoid obstacles and other aircraft, and to safely "return home" automatically in the event that something goes wrong. Visual and inertial sensors (VI sensors), Flir thermal imaging, and Flasher light-emitting diodes (LEDs) can allow drones to maneuver and navigate fully autonomously.¹³ Three-dimensional mapping and collision avoidance software allow navigation in the unlikely event that the global positioning system (GPS) fails.¹⁴ Combined with gyros, accelerometers, magnetometers, altimeters, and GPS, drones can autonomously sense position, altitude, attitude, angular rate, acceleration, tilt, and magnetic heading.¹⁵ These technologies can currently allow drones to perform incredibly accurate and agile maneuvers.¹⁶ Many of these technologies are being successfully and safely used in autonomous vehicles (e.g., Google has driven its autonomous vehicles nearly

¹³ SKYBOTIX, <http://www.skybotix.com> (last visited Apr. 18, 2015).

¹⁴ *Id.*

¹⁵ *Id.*

¹⁶ Raffaello D'Andrea, *The Astounding Athletic Power of Quadcopters*, TED TALK (Jun. 11, 2013) http://www.ted.com/talks/raffaello_d_andrea_the_astounding_athletic_power_of_quadcopters?language=en.

one million miles without accident¹⁷). The level of airspace situational awareness that a UAS operator can achieve with a combination of these systems will likely be on par with or better than that of a human pilot. The FAA should recognize the state of this technology and acknowledge that it can adequately minimize the risk of drone operations outside the line of sight of a human operator.

Instead of banning all such operations, the FAA should require that pilots flying drones outside line of sight are trained and licensed to use appropriate technology. The Agency could also require special certifications of UAS with FPV and VI autonomous systems. Further, the Agency could condition certifications on pilots or UAS meeting flight-time requirements. This would appropriately match training and technical requirements to degrees of risk—the type of nuanced balancing the FAA should be engaged in. The objective of these types of measures is not to make it easy for *all* drones to fly beyond line of sight, but to set a high bar that *some* advanced drones and operators can meet.

II. KEEP THE 500-FEET LIMIT AS A BASELINE BUT ALLOW CERTIFIED DRONES AND PILOTS TO FLY ABOVE IT

A. 500-Foot Limit on Drone Flight

The draft rules' 500-foot limit for drone flight is a sensible baseline, but exceptions should be permitted. This threshold is reasonably based on the fact that most large passenger aircraft can only fly in the “navigable airspace” above 500 feet, not below (unless taking off or landing). It defines where drones may present catastrophic risks (above the threshold, where collisions with passenger aircraft are a significant possibility) and more moderate risks (below the threshold, where small drones can cause only limited harm to people or property on the ground).

Below 500 feet, Small UAS generally present limited risks to those on the ground because they are small, typically between one

¹⁷ Chris Urmson, *The Latest Chapter for the Self-Driving Car: Mastering City Street Driving*, GOOGLE BLOG (Apr. 28, 2014), <http://googleblog.blogspot.com/2014/04/the-latest-chapter-for-self-driving-car.html>.

and two feet in diameter, and usually weigh between 1 and 4.4 pounds. DJI, a world leader in small UAS, only sells products in this size and weight range.¹⁸ At this relatively small size and light weight, most Small UAS flown below 500 feet seem unlikely to cause death or serious injury to person or property on the ground below, although they certainly can cause some harm, such as a bad bruise, concussion, or laceration.

Above 500 feet, the risks increase because drones are more likely to collide with passenger aircrafts and subsequently cause catastrophic accidents. This could result from a drone entering a jetliner turbine, colliding with a cockpit, or causing structural damage to a wing or tail. Such collisions could down an airplane and kill dozens or hundreds of people. It could also cause hundreds of thousands or millions of dollars in property damage as well as additional casualties on the ground.¹⁹

The risks of drones colliding with passenger aircraft are real. In 2014, over 150 pilots and flight controllers reported drones in “close” proximity with an aircraft or an airport.²⁰ As The Wall Street Journal reported: “Some pilots described near misses, with drones coming within dozens of feet, a distance that amounts to a few seconds in aviation [and some] pilots had to take action to avoid the drones.”²¹

Of particular concern is that many of these incidents are occurring near or over major metropolitan areas like New York City, which has some of the world’s most congested airspace. In September 2014, for example, three small commercial passenger jets “reported a very close call” with a drone at 1,900 feet while approaching La Guardia Airport in New York.²² The risk is

¹⁸ *All Products*, DJI, <http://www.dji.com/products> (last visited Apr. 21, 2015).

¹⁹ Christopher W. Lum, Kristoffer Gauksheim, Tadej Kosel & Tad McGeer, *Assessing and Estimating Risk of Operating Unmanned Aerial Systems in Populated Areas*, U. WASH. AUTONOMOUS FLIGHT SYS. LABORATORY (Sept. 20, 2011), <http://arc.aiaa.org/doi/abs/10.2514/6.2011-6918>.

²⁰ Jack Nicas, *Increase in Drones Spotted near Aircraft*, WALL ST. J. (Nov. 26, 2014, 5:04 PM), <http://online.wsj.com/articles/faa-reports-more-aircraft-drone-near-misses-1417025519>.

²¹ *Id.*

²² *Id.*

elevated in such urban environments because there are far more airplanes and people.

The rate of “close calls” also seems to be increasing. While only three “close calls” were reported each month in the first half of 2014, the average increased to more than 31 reports per month between July and October.²³ This rate will no doubt continue to increase, particularly as drone sales accelerate.

These incidents suggest that the FAA’s draft rules prohibiting drone flights above 500 feet is a sensible baseline. But flight above 500 feet should not be completely prohibited. Instead, the FAA should set permitting and certification requirements for qualified pilots and drones to fly above 500 feet. Because the risk of drone flight above 500 feet relates primarily to encounters with passenger aircraft, the FAA should allow certified drones and pilots to fly above this threshold where the risk of encounters with passenger aircraft is very low (such as over rural farm land, forests, and water).

B. Proposed Exceptions to the 500-Foot Limit

In addition, passenger aircraft typically travel along well-defined *airways* (flight corridors at varying altitudes connecting specific locations).²⁴ Only specific, certified airplanes are allowed to fly in these defined airways.²⁵ Certified drones and pilots could, therefore, be allowed to safely fly outside of these airways at certain defined altitudes above 500 feet. In the long term, the FAA could designate standalone airways for drones, which could, just as with passenger aircraft, vary according to altitude, the class of drone, speed requirements, pilot certifications, and mission objectives. Such UAS airways would become particularly relevant as transporter drones move from current military applications to civilian applications, a near inevitability.²⁶

²³ *Id.*

²⁴ *Airway (Aviation)*, WIKIPEDIA, [http://en.wikipedia.org/wiki/Airway_\(aviation\)](http://en.wikipedia.org/wiki/Airway_(aviation)) (last visited Jun. 16, 2015).

²⁵ *Id.*

²⁶ *AirMule Transporter UAV, Israel*, AIRFORCE TECH., <http://www.airforce-technology.com/projects/airmule-uav> (last visited Mar. 1, 2015).

Certifications and permits to fly above 500 feet would be particularly valuable in rural areas over large farms, forests, oil fields, or bodies of water. The FAA has already granted “restricted category type certificates” and Special Airworthiness Certificates (SACs) to an energy company as well as a whale-research institution in Alaska to operate the fifty-pound Boeing ScanEagle X200 and AeroVironment’s Puma.²⁷ The certifications contain no altitude limits. The same certification approach should be broadened for other “special purpose operations”²⁸ for varying classes of drones and mission objections above 500 feet.

While the FAA’s draft rules understandably prohibit drone flight above 500 feet, its permanent rules should create a clear process by which operators can obtain SACs and permits to fly above this threshold. Longer term, the FAA should consider designating special airways for drones outside of passenger flight airways. This will become particularly relevant as transporter drones and larger-class drones find commercial uses in our skies.

III. ADOPT THE PROPOSED MICRO UAS CATEGORY—REGULATE DIFFERENT DRONES AND RISKS DIFFERENTLY

A. Micro UAS Copter Classification

The FAA has proposed for comment a possible, less-regulated category for Micro UAS (drones that weigh less than 4.4 pounds).²⁹ This is a very good idea because it reflects a general principle that not all drones should be treated alike as different drones present very different risks. Regulations should proportionally address these risks by creating a handful of drone classifications, such as the Micro UAS category (but not necessarily stopping there). Early reports indicated that the FAA

²⁷ *One Giant Leap for Unmanned-kind*, FED. AVIATION ADMIN. (last updated Jul. 26, 2014), http://www.faa.gov/news/updates/?newsId=73118&omniRss=news_updatesAoc&cid=101_N_U.

²⁸ 14 C.F.R. § 21.25 (1975).

²⁹ *DOT and FAA Propose New Rules for Small Unmanned Aircraft Systems*, FED. AVIATION ADMIN. (Feb. 15, 2015), http://www.faa.gov/news/press_releases/news_story.cfm?newsId=18295.

was going to regulate all drones under a single category.³⁰ This would be an error, analogous to regulating all passenger aircraft in the same way.

The proposed Micro UAS classification is important because most commercial drone quadcopters weigh between zero and five pounds and present low risk to people and property. The ubiquitous \$400–\$1,000 DJI Phantom drones weigh between one and five pounds and can travel no faster than thirty-five mph.³¹ Probably the worst these devices could do is cause a small dent on a car's hood, break a window, or give someone a bad bruise, concussion, or cut; they are unlikely to cause any major property damage or serious injury or death. There are many other types of drones that weigh less than 4.4 pounds and even less than one pound.³² It should be plain that they present minimal (although not negligible) risks.

This is why the FAA's proposed Micro UAS category is more flexible and allows, for example, flight over the heads of bystanders.³³ The proposed Micro UAS rules are bolstered by the fact that the entire category will become safer over time with cheaper and more advanced autonomous stabilizers, sensors, navigation, and obstacle avoidance systems.

In addition, existing tort law can likely handle most of the hazards Micro UAS present, including harm to property or person, trespassing within the "immediate reaches" above property, invasion of privacy, etc. Other basic tort concepts of negligence,

³⁰ *Free the Drones*, ECONOMIST (Dec. 6, 2014), <http://www.economist.com/news/leaders/21635489-drones-have-immense-commercial-potentialso-long-regulators-dont-try-tether-them>.

³¹ *Phantom*, DJI, <http://www.dji.com/product/phantom> (last visited Dec. 12, 2014).

³² See *STRHOBBY UDI U818A 2.4G 4CH 6 Axis RC Quadcopter*, LIGHTINTHEBOX, <http://bit.ly/1w39U6N> (last visited Apr. 15, 2015); *Seresroad CX-10 4CH 2.4GHz 6 Axis Gyro LED Rechargeable Mini Nano RC UFO Quadcopter*, AMAZON.COM, <http://amzn.to/1yf7E8e> (last visited Apr. 15, 2015).

³³ *DOT and FAA Propose New Rules for Small Unmanned Aircraft Systems*, FED. AVIATION ADMIN. (Feb. 15, 2015), http://www.faa.gov/news/press_releases/news_story.cfm?newsId=18295.

gross negligence, nuisance, and reckless endangerment³⁴ will also apply. At a minimum, the FAA should create light-touch regulations for Micro UAS flown under 500 feet, allowing the common law to guide most judicial decisions and the threat of civil lawsuits to deter risky flying.

B. *Small UAS Copter Classification*

Small UAS copters between 4.4 and 55 pounds belong to a higher-risk category, warranting a separate classification and greater regulation. Amazon, for example, envisions package-delivery octocopter drones weighing up to fifty-five pounds, inclusive of payloads.³⁵ A fifty-five-pound octocopter falling out of the sky clearly presents greater risks to persons and property than smaller drones. The same goes for a ten-pound quadcopter or a twenty-pound hexacopter with heavy camera equipment.³⁶ These drones could cause more substantial injury or damage to property.

The FAA should regulate such drones in proportion to their slightly elevated risks.³⁷ The FAA's proposed rules set many of the right limits on these types of drones between 4.4 and 55 pounds, requiring drone registration with the FAA and passage of a pilot knowledge test. But banning their commercial use directly over non-operators (which would effectively prevent flight above urban environments) is over-burdensome. While Small UAS between 4.4 and 55 pounds present higher risks, the risks are still *relatively* low. For example, over 30,000 Americans are killed in car accidents each year, and yet we tolerate the risks in the interests of

³⁴ Huerta v. Pirker, N.T.S.B. Order No. EA-5730 (Nov. 18, 2014).

³⁵ Jillian D'Onfro, *Jeff Bezos Says Amazon's Delivery Drones Are 'Truly Remarkable,' but You Probably Won't See Them Soon*, BUS. INSIDER (Dec. 2, 2014), <http://www.businessinsider.com/amazon-jeff-bezos-delivery-drones-amazon-prime-air-2014-12>.

³⁶ David Shields, *What Is a Hexacopter?*, QUADCOPTER DEALS, <http://quadcopterdeals.com/what-is-a-hexacopter/> (last visited Apr. 12, 2015).

³⁷ Christopher W. Lum & Blake Waggoner, *A Risk Based Paradigm and Model for Unmanned Aerial Systems in the National Airspace*, U. WASH. AUTONOMOUS FLIGHT SYS. LABORATORY (Mar. 2011), <http://arc.aiaa.org/doi/abs/10.2514/6.2011-1424>.

economic progress and broader freedoms.³⁸ By contrast, not a single fatality has been reported from civil or recreational UAS flight in the United States, despite accelerating use in recent years. The relatively low risks associated with mid-size UAS over non-operators are thus *tolerable* in light of the benefits they promise in services and economic development.

C. Fixed-Wing Drone Classification

Fixed-wing UAS belong to another elevated-risk category. Currently, the FAA draft rules treat them the same as copters by considering only a drone's weight and speed. But, it is important to recognize certain distinct risks presented by winged drones. As Raphael Pirker's dare-devil, fixed-wing flight over the University of Virginia demonstrated, these drones present greater potential for high-speed, reckless flying and for causing more substantial human injury and property damage.³⁹ It is basic physics that a fifty-five-pound winged drone travelling at 100 miles per hour will cause more damage than a fifty-five-pound quadcopter traveling at 35 miles per hour. Fixed-wing drones also have the potential for longer-range missions, which present greater risk of loss of electronic controls by the operator.⁴⁰

The FAA must recognize the varying risks presented by these different categories of UAS and regulate them with appropriate nuance. There are notable differences between 4.4-pound copters, 55-pound copters, and winged drones. The FAA should balance the relative risks with the rewards and set proportional limitations. In other words, the FAA should apply the same kind of nuance it applies to passenger aircraft to drones. The Micro UAS category is one good step in this direction, but the FAA need not stop there.

³⁸ *Fatality Analysis Reporting System (FARS) Encyclopedia*, NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., <http://www-fars.nhtsa.dot.gov/Main/index.aspx> (last visited Feb. 27, 2015).

³⁹ SUAS News, *Stunt Sheep Don't [sic] Try This at Home: Trappy's \$10k Fine UVA Video*, YOUTUBE, <https://www.youtube.com/watch?v=OZnJeuAja-4>.

⁴⁰ Joan Lowy, *FAA OKs Commercial Drone Flights over Land*, COLUMBIAN (Jun. 11, 2014, 6:00 AM), <http://www.columbian.com/news/2014/jun/11/faa-oks-commercial-drone-flights-over-land>.

IV. ADOPT AN ENABLING PHILOSOPHY TOWARD DRONES BASED ON THEIR GREAT ECONOMIC PROMISE AND TOLERABLE RISKS

The FAA has not expressed a clear philosophy toward drones. Announcing such a philosophy is the starting point for policies that aim to actively enable UAS or simply limit risks. The FAA should adopt a philosophy of active enablement, flowing from the recognition of the immense potential of UAS in industries and fields as wide-ranging as agriculture, product delivery, photography, journalism, emergency response, forestry, energy exploration, oceanography, and climate science, among others. The Association for Unmanned Vehicle Systems International (AUVSI) predicts the industry will create \$82 billion in economic revenue and 100,000 jobs over the next decade.⁴¹ It also predicts that continued regulatory delays will cost the United States as much as \$10 billion per year—\$27.6 million per day—in potential earnings from investments in drone research and development.⁴² The Teal Group, an aerospace and defense industry market intelligence firm, predicts Americans will spend in excess of \$11 billion on drone research, development, testing, evaluation, and procurement in the next decade.⁴³ The FAA itself estimates that drones will have an economic impact greater than \$100 million per year.⁴⁴ Whatever the precise economic contribution, it is clear that drones *can* contribute significantly to U.S. economic growth.

To foster these economic benefits, the FAA should commit to rules that *actively enable* the commercial, scientific, and educational applications of drones. The countervailing risks to

⁴¹ *Economic Report*, ASS'N UNMANNED VEHICLE SYS. INT'L, (AUVSI) (Mar. 2013), <http://www.auvsi.org/econreport>.

⁴² *Id.*

⁴³ Lamar Smith, *Economic Potential of Drones Delayed by Lack of Regulation*, INVESTOR'S BUS. DAILY (Feb. 24, 2015), available at <http://news.investors.com/ibd-editorials-perspective/022415-740680-drone-found-at-white-house-starts-regulation-debate.htm>.

⁴⁴ Gregory McNeal, *Leaked FAA Document Provides Glimpses into Drone Regulations*, FORBES (Feb. 14, 2015, 6:19 PM), <http://www.forbes.com/sites/gregorymcneal/2015/02/14/the-faa-may-get-drones-right-after-all-9-insights-into-forthcoming-regulations>.

people and property are simply not great enough to justify highly burdensome limits. While the FAA must establish boundaries, it should adopt only minimally burdensome ones necessary to secure *adequate* safety for people and property. Some risks, just as with cars, must be tolerated in order to strike the right balance between economic progress and safety concerns. The FAA should not shy away from an active enablement philosophy that performs this balancing. The United States' pioneering history provides ample support for such measured risk-taking.

V. ACTIVELY GRANT EXEMPTIONS TO THE INTERIM BAN IN ORDER TO INFORM AND IMPROVE THE DRAFT RULES

Applying an active enablement philosophy in the interim of permanent rules, the FAA should proactively grant exemptions to its interim ban on non-recreational, civil drone flights. It should speedily issue FMRA Section 333 Exemptions⁴⁵ for qualified commercial, scientific, and educational applicants; Certificates of Waiver or Authorization (COAs) for publicly-funded drone flights; and SACs for more advanced missions. The FAA has so far approved 24 Section 333 Exemptions out of 342 applications.⁴⁶ This is a conservative approval rate that is inconsistent with any active enablement philosophy. If the FAA is going to promulgate permanent rules that facilitate civil uses, it should start easing the transition by actively approving exemptions that comply with the basic parameters of the draft rules. These exemptions will provide valuable information regarding the efficacy of the rules and allow for modifications to the rules before they are made permanent.

Section 333 Exemptions and SACs should be granted especially aggressively in rural and farm areas. Because the agricultural industry is expected to generate a very large percentage of the economic benefits and because the risks in rural areas are much lower, applications from this industry should be

⁴⁵ FAA Modernization and Reform Act of 2012, Pub. L. No. 112-95, § 133, 126 Stat. 11, 75–76.

⁴⁶ Steven Pazar, *FAA's Proposed UAS Rules – A Missed Opportunity*, PAZAR L. (Feb. 19, 2015), <http://www.pazarlaw.com/faas-proposed-uas-rules-a-missed-opportunity>.

fast-tracked.⁴⁷

The FAA should also more actively grant “restricted category type certificates” and SACs for “special purpose” advanced flights, particularly those beyond the line of sight of operators or above 500 feet. It granted these certificates in 2013 for operations in Alaska⁴⁸ and should accelerate their approval for use over low-risk farmland, rural areas, wilderness, and bodies of water. This will facilitate the development of drones that can *safely* fly beyond the line of sight of operators and above 500 feet using any combination of FPV video, IV sensors, GPS, and altimeters.

CONCLUSION

The FAA’s draft rules demonstrate that the FAA is intent on integrating UAS into America’s skies. But, the rules are still too burdensome relative to the safety risks presented by modern Small UAS technology. They are also over-burdensome relative to what other countries are doing and to America’s pioneering history. If the FAA adopts these draft rules without modification, America will fall behind the global competition in this field.

While the FAA sets valuable baseline limits for most drones with its line-of-sight requirements and 500-foot limit, these limits ignore the incredible capabilities of advanced drones and trained pilots to fly safely beyond line of sight and above 500 feet. The FAA should adopt advanced drone certifications and piloting requirements to allow qualified firms to safely add value beyond line of sight and above 500 feet. The agency should also place fewer burdens on less risky drones, and the proposed Micro UAS category is a very important step in this direction. Eventually, drones should be treated with the same level of nuance as passenger aircraft, matching greater risks to greater aircraft

⁴⁷ Chad Garland, *Drones May Provide Big Lift to Agriculture When FAA Allows Their Use*, L.A. TIMES (Sep. 13, 2014, 5:00 AM), <http://www.latimes.com/business/la-fi-drones-agriculture-20140913-story.html#page=1>.

⁴⁸ *Commercially Certified, ScanEagle Head for Alaska to Track Icebergs, Whales*, DEFENSE UPDATE (July 27, 2013), http://defense-update.com/20130727_scan_eagle_certifie.html#.VIA3pzHF-So.

certification and piloting requirements.

Much of the draft rules' weaknesses derive from an apparent lack of a guiding philosophy. The right philosophy is that drones have immense economic, scientific, and educational potential with limited (and tolerable) risks, and so should be actively enabled by the FAA. This philosophy should apply not only to the draft rules, but also to the FAA's approach to granting exemptions to the interim ban on civil flights, which will continue to stifle UW research and broader industry applications for another couple years. The FAA should actively grant exemptions, COAs, and SACs in order to learn as much as possible about drone use in society before the rules are made permanent. It should also more actively grant these exemptions so that America does not fall irreparably behind. The FAA's new streamlined program for "summary grants" of approval for drone operations is a great start.⁴⁹ It should keep moving in this direction.

The recent grant of authorization to Amazon to test its product-delivery drones is also very encouraging.⁵⁰ But the FAA's draft line-of-sight requirement would, ultimately, stymie any UAS product-delivery model. Facing such restrictive U.S. rules, great American companies like Amazon will continue to set up drone research operations in countries such as Canada, the UK, and Australia, instead of right here at home. This is a problem. The FAA has an opportunity to avoid such drone drain by making nuanced modifications to the first draft of its Small UAS rules.

⁴⁹ Brian Fung, *The FAA's Given Amazon the Official Go-Ahead for Drone Testing*, WASH. POST (Apr. 10, 2015), <http://www.washingtonpost.com/blogs/the-switch/wp/2015/04/10/the-faas-given-amazon-the-official-go-ahead-for-drone-testing>.

⁵⁰ *Id.*

