

THE CHANGING MEANING OF PATENT CLAIM TERMS†

Mark A. Lemley*

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Dictionaries are word museums. Like archaeologists at a dig, lexicographers mine the language through the eons for patterns of usage. Language evolves, and yesterday’s meaning may disguise today’s nuance.¹

The claims of a patent are central to virtually every aspect of patent law. The claims define the scope of the invention, and their meaning therefore determines both whether a defendant’s product infringes a patent and whether the patent is valid. One of the most significant aspects of patent litigation is “claim construction,” the process of defining the words of the

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* William H. Neukom Professor of Law, Stanford Law School; Director, Stanford Program in Law, Science and Technology; Of Counsel, Kecker & Van Nest LLP, San Francisco, California. I represented Genentech in the *Chiron v. Genentech* case discussed in this paper, so I want to make it even more than normally clear that my opinions are my own and do not represent those of my firm or my clients. Thanks to Monte Cooper, Chris Cotropia, Dennis Crouch, Daralyn Durie, Rose Hagan, Rob Merges, Joe Miller, Craig Nard, Arti Rai, Josh Sarnoff, Jay Thomas, Shashank Upadhye, Hal Wegner, and participants in the IP Scholars’ Conference at Cardozo Law School and a conference at Lewis & Clark Law School for helpful comments and to Bhanu Sadasivan for research assistance.

1. *Country Mut. Ins. Co. v. Am. Farm Bureau Fed’n*, 876 F.2d 599, 600 (7th Cir. 1989).

claim in other, theoretically clearer words.² Courts construe the claims of the patent by starting with the plain meaning of their terms as they would be understood by a person having ordinary skill in the art, or PHOSITA. Claim construction occurs in every patent case during a “*Markman* hearing.”³ Indeed, claim construction is so important to patent litigation that once the court construes the claims, most patent cases settle,⁴ and those that do not are often decided on summary judgment.⁵ As Judge Rich succinctly put it, “the name of the game is the claim.”⁶

In order to construe the claims of a patent, the court must fix the meaning of the claim terms as of a particular point in time. Both the knowledge of the PHOSITA in a particular field and the meaning of particular terms to that PHOSITA will frequently change over time.⁷ Indeed, the risk of change in the meaning of terms over time is particularly great in patent law, because patents necessarily involve new ideas, and the process of assigning terms to describe those new ideas is not static. As the Supreme Court recognized many years ago, “it does not follow that when a newly invented or discovered thing is called by some familiar word, which comes nearest to

2. See *Scripps Clinic & Research Found. v. Genentech, Inc.*, 927 F.2d 1565, 1580 (Fed. Cir. 1991) (“[T]he construction of claims is simply a way of elaborating the normally terse claim language . . .”). One may reasonably doubt whether layering new words on top of old necessarily adds to the clarity of the claims. See, e.g., Dan L. Burk & Mark A. Lemley, *Quantum Patent Mechanics*, 9 LEWIS & CLARK L. REV. 29 (2005); Craig Allen Nard, *A Theory of Claim Interpretation*, 14 HARV. J.L. & TECH. 1, 44 (2000) (rejecting the idea of a plain meaning in claim construction); cf. William N. Eskridge, Jr., *Gadamer/Statutory Interpretation*, 90 COLUM. L. REV. 609, 679 (1990) (explaining how dictionaries don’t avoid the problem of subjectivity of language, because the decisionmaker must choose among different definitions based on their own subjective understanding of meaning).

3. In *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996), the Supreme Court decided that construction of the claims of the patent was a question of law for the court, just as courts are responsible for construing other legal documents such as statutes and contracts. As a result, courts hold pretrial “*Markman* hearings” to define the meaning of the claims.

4. For example, Kimberly Moore found that cases settled earlier in the Northern District of California, which has regimented procedures requiring disclosure of infringement and validity contentions and a relatively early *Markman* hearing, and later in the District of Delaware, which often delays the *Markman* hearing until just before (or even during) trial. Kimberly A. Moore, *Forum Shopping in Patent Cases: Does Geographic Choice Affect Innovation?*, 79 N.C. L. REV. 889, 911 (2001); see also DAVID F. HERR, ANNOTATED MANUAL FOR COMPLEX LITIGATION § 33.223, at 649 (4th ed. 2005) (“Early claim construction may also facilitate settlement . . .”). The overwhelming majority of patent lawsuits settle before trial. See, e.g., Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1501 (2001) (“The overwhelming majority of [patent] lawsuits settle or are abandoned before trial.”); Kimberly A. Moore, *Judges, Juries, and Patent Cases—An Empirical Peek Inside the Black Box*, 99 MICH. L. REV. 365 (2000).

5. See HERR, *supra* note 4, at 649.

6. Giles S. Rich, *Extent of Protection and Interpretation of Claims—American Perspectives*, 21 INT’L REV. INDUS. PROP. & COPYRIGHT L. 497, 499 (1990).

7. See, e.g., Joshua D. Sarnoff, *Abolishing the Doctrine of Equivalents and Claiming the Future After Festo*, 19 BERKELEY TECH. L.J. 1157 (2004).

expressing the new idea, that the thing so styled is really the thing formerly meant by the familiar word.”⁸ In that case, the Court found that the meaning of the term “bridge” in a 1790 statute did not mean the same thing in 1860 after the development of railroad bridges. The term was the same, but its scope had changed over time in response to changes in technology.

But at which point in time shall we fix the meaning of the claims? It is a fundamental principle of patent law that the time as of which we determine the meaning of claim terms varies depending on what legal rule is at issue. Where the question is one of novelty or nonobviousness—whether the invention is truly new—the courts compare the patented invention to the prior art as both were understood *at the time of the invention*. Where the question is one of enablement or written description—whether the inventor understood and described the invention in sufficient detail—courts evaluate the adequacy of the disclosure based on the meaning of the claims *at the time the patent application was filed*. Where the question involves the meaning of a special patent claim element called a “means-plus-function” claim, courts evaluate the scope of that claim element *at the time the patent issues*. And where the question involves alleged infringement of the patent, courts evaluate infringement in at least some circumstances based on the meaning of the claim *at the time of infringement*. What claim terms would mean to one of ordinary skill in the art therefore may depend on what legal rule is at issue, and therefore the time as of which we ask the question.

An equally fundamental principle of patent law is that patent claims must be construed as an integrated whole. A patent claim may not be treated “like a nose of wax which may be turned and twisted in any direction, by merely referring to the specification, so as to make it include something more than, or something different from, what its words express.”⁹ In particular, patentees (or accused infringers, for that matter) are not permitted to argue that a patent claim means one thing when it comes to validity and something else entirely when it comes to infringement. Instead, courts give claims a single meaning in any given case, engaging in only one act of claim construction for any given patent. Under this principle, patent claim terms have a single definite meaning. In part this is a matter of fundamental fairness—a sense that what’s sauce for the goose is sauce for the gander. But it is also necessary if a patent is to put the public on notice of what the patentee owns.

8. *Bridge Proprietors v. Hoboken Co.*, 68 U.S. (1 Wall.) 116, 147 (1864); *see also* *Bischoff v. Wethered*, 76 U.S. (9 Wall.) 812, 816 (1869); Samuel A. Thumma & Jeffrey L. Kirchmeier, *The Lexicon Has Become a Fortress: The United States Supreme Court’s Use of Dictionaries*, 47 *BUFF. L. REV.* 227, 299 (1999) (noting the Supreme Court’s reliance on contemporaneous dictionaries to interpret statutes).

9. *White v. Dunbar*, 119 U.S. 47, 51 (1886).

These two principles contradict each other. The meaning of technological terms is fluid. A term that means one thing to scientists at one time may mean something different later as understanding in the field increases. Because both patent prosecution and patent litigation can take years and even decades,¹⁰ fixing the time at which we determine the meaning of any given term may turn out to matter in a substantial number of cases. When the meaning of a patent claim term changes over time, the first principle would give that term a different meaning for validity purposes than for infringement purposes. But in doing so, the court would undermine the second principle, since the claim term will not mean the same thing for all purposes, and it may indeed be impossible to determine the scope of a patent at all on an *ex ante* basis.

This tension has been latent for some time, but it came to a head in *Superguide Corp. v. DirectTV Enterprises*.¹¹ In that case, the question was whether a 1985 patent application that used the claim term “regularly received television signal” could be construed to cover digital television signals that were not developed until well after the patent issued. The Federal Circuit held that it could, relying on the well-established principle that the meaning of the claim term for infringement purposes was determined as of the time of infringement, not the earlier filing date. Judge Michel dissented. He started with the assumption that the meaning of the claims was fixed as of 1985, and concluded that the claim language in question would not have been understood *in 1985* to cover digital television. Both the majority and the dissent are correct within their own spheres; their disagreement comes from the fact that they start from fundamentally different principles. Other cases have presented the same problem.¹²

10. Patent prosecution takes just under three years on average, *see* John R. Allison & Mark A. Lemley, *Who's Patenting What? An Empirical Exploration of Patent Prosecution*, 53 VAND. L. REV. 2099, 2118 (2000) [hereinafter Allison & Lemley, *Who's Patenting What?*], but the practice of “continuation” applications can extend that to decades. *See* Mark A. Lemley & Kimberly A. Moore, *Ending Abuse of Patent Continuations*, 84 B.U. L. REV. 63, 121–23 (2004) (documenting patent applications taking as long as 68 years to issue). Once the patent issues, it takes time for the patentee to detect infringement and sue, and more time for the case to be resolved. As a result, the elapsed time between the first filing of a patent application and the final resolution of a case that goes to judgment is a mean of 12.3 years and a median of 11.3 years. John R. Allison & Mark A. Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 AIPLA Q.J. 185, 236 tbl.11 (1998) [hereinafter Allison & Lemley, *Empirical Evidence*].

11. 358 F.3d 870 (Fed. Cir. 2004).

12. *See* PC Connector Solutions LLC v. Smartdisk Corp., 406 F.3d 1359, 1364 (Fed. Cir. 2005) (finding that claim language referring to an I/O port “normally connectible to a conventional computer input/output port” required connectibility to a “port that was in common use at the time of filing in 1988”); *Schering Corp. v. Amgen Inc.*, 222 F.3d 1347, 1349 (Fed. Cir. 2000). In *Schering*, the question was the meaning of the term “IFN- α ,” which was originally used to refer to a particular type of interferon but was ultimately understood by scientists to refer to several different classes of proteins, of which the patentee was only concerned with one. The court held that “[t]he [claim] term

In Part I of this paper, I document the distinguished pedigree of both principles. In Part II, I argue that patent claim terms should have a fixed meaning throughout time and that this meaning should be fixed at the time the patent application is first filed. Part II also discusses some complications that arise as a result of the prosecution process and how to deal with the problem of later-developed technology.

I. PRINCIPLES OF CLAIM CONSTRUCTION

A. *Situating the Meaning of Claim Terms in Time*

Claim construction is a versatile creature, underlying virtually every doctrine in patent law. The role of claim construction is always to define the scope of the claims, though the reasons we want to define that scope differ depending on the legal rule in question. In this Section, I discuss the most common cases in which claim construction affects substantive patent determinations of validity or infringement. In each case, the application of the legal principle is bound up with the understanding of a hypothetical person having ordinary skill in the art, or PHOSITA.¹³ The role of the PHOSITA is significant for our purposes, because the meaning of claim terms is also determined by asking what the PHOSITA would understand them to mean.¹⁴ There is a natural and understandable tendency to define the PHOSITA for

as used in the . . . patent . . . did not and could not enlarge the scope of the patent to embrace technology arising after its filing.” *Id.* at 1353; see Robin Feldman, Rethinking Rights in Biospace, S. CAL. L. REV. (forthcoming 2005) (manuscript at 24–26, on file with author) (discussing this case). Cf. *Middleton, Inc. v. Minn. Mining & Mfg. Co.*, 311 F.3d 1384, 1389 (Fed. Cir. 2002) (referring interchangeably to the invention date and the filing date as the relevant time for fixing meaning).

The question was also squarely presented in *Chiron Corp. v. Genentech, Inc.*, 363 F.3d 1247 (Fed. Cir. 2004), but the court declined to resolve the “dilemma” of “this complex claim construction question,” deciding instead to affirm the jury’s finding that the patent was invalid for failure to describe and enable the full scope of the claims. *Id.* at 1258. Since the invalidity findings depended on the meaning of the claims, which in turn depended on the time at which they were construed, it seems the court should have resolved the issue.

The PTO has recognized the problem in one specific context—patent claims that include as an element a trademarked product such as Teflon or Velcro. The PTO forbids such references because it recognizes that the composition of the product referred to by the trademark may change over time. U.S. PATENT AND TRADEMARK OFFICE, U.S. DEP’T OF COMMERCE, MANUAL OF PATENT EXAMINING PROCEDURE § 608.01(v) (8th ed., rev. 2 2004). I am indebted to Shashank Upadhye for this example.

13. On the role of the PHOSITA in patent law, see Dan L. Burk & Mark A. Lemley, *Is Patent Law Technology-Specific?*, 17 BERKELEY TECH. L.J. 1155 (2002), and John O. Tresansky, *PHOSITA—The Ubiquitous and Enigmatic Person in Patent Law*, 73 J. PAT. & TRADEMARK OFF. SOC’Y 37 (1991). See also ROBERT L. HARMON, PATENTS AND THE FEDERAL CIRCUIT § 4.3 (5th ed. 2001); Joseph P. Meara, Note, *Just Who Is the Person Having Ordinary Skill in the Art? Patent Law’s Mysterious Personage*, 77 WASH. L. REV. 267 (2002).

14. See *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 986 (Fed. Cir. 1995) (en banc), *aff’d*, 517 U.S. 370 (1996).

claim construction purposes as the same person with the same knowledge as the PHOSITA for validity and infringement purposes, though that may in fact be an error.¹⁵

1. *Novelty and Nonobviousness*

In order to decide whether a patented invention is novel and nonobvious, we must know what the patent covers, because a patent covering a range of devices or chemicals will be held invalid if even a single one of those covered devices exists in the prior art.¹⁶ Whether the device exists in the prior art for novelty purposes is determined by reading the relevant references to determine whether the PHOSITA would have understood that the references taught the claimed invention.¹⁷ Whether an invention is obvious is determined by asking whether the PHOSITA would have found the differences between the prior art and the claimed invention obvious.¹⁸ Novelty and nonobviousness are both determined as of the date of invention.¹⁹ Because

15. See Burk & Lemley, *supra* note 13, at 1189–90 (noting that the two PHOSITAs are logically distinct).

16. See *In re Gosteli*, 872 F.2d 1008 (Fed. Cir. 1989); *In re Omeprazole Patent Litig.*, No. M-21-81BSJ, 2004 WL 1171254, at *9 (S.D.N.Y. May 25, 2004) (“Where a patent claims a genus, prior art disclosing even one species within the genus invalidates the entire claim.”).

17. See, e.g., *In re Wiggins*, 488 F.2d 538 (C.C.P.A. 1973). One significant exception to this rule is the inherency doctrine, under which a prior art reference can anticipate a later invention if the invention was inherently present in the prior art and the public was receiving the benefit of the invention, even if people weren’t aware of it. See, e.g., *In re Cruciferous Sprout Litig.*, 301 F.3d 1343 (Fed. Cir. 2002) (holding that the patent on newly discovered cancer-fighting benefit of eating broccoli was anticipated because people have been eating broccoli and gaining the benefit for millennia, even if they weren’t aware of the benefit). Under the inherency doctrine, the time at which the PHOSITA must understand that the invention was anticipated is delayed, but the time at which the anticipation itself is tested remains the time at which the invention is made. For a discussion of the contours of the inherency doctrine, see Dan L. Burk & Mark A. Lemley, *Inherency*, WM. & MARY L. REV. (forthcoming 2005) [hereinafter Burk & Lemley, *Inherency*].

18. 35 U.S.C. § 103 (2000). This is concededly a somewhat circular definition, and obviousness, like negligence in tort law, is a somewhat broad-based inquiry. Courts have taken some steps to try to cabin the essential amorphousness of the doctrine. See, e.g., *Graham v. John Deere Co.*, 383 U.S. 1 (1966) (adding secondary or “objective” considerations to nonobviousness analysis); *In re Dembiczak*, 175 F.3d 994 (Fed. Cir. 1999) (requiring proof of motivation to combine in order to combine prior art references); *In re Fine*, 837 F.2d 1071, 1075 (Fed. Cir. 1988) (rejecting the “obvious to try” standard). But the underlying inquiry remains a judgment call based on what the PHOSITA would believe.

19. See 35 U.S.C. § 102(a), (g) (2000) (refusing to grant a patent if certain events occur “before the invention” by the patentee); 35 U.S.C. § 103(a) (2000) (determining obviousness from the perspective of a person having ordinary skill in the art “at the time the invention was made.”).

A separate set of rules in section 102 deal not with prior art that predates the patentee’s invention, but art that was created after the patentee’s invention but more than a year before the patentee filed a patent application. 35 U.S.C. § 102(b) (2000). Section 102(b) involves what are known as statutory bars to patenting, rather than novelty per se. For purposes of section 102(b), the meaning

novelty and nonobviousness both focus on what the PHOSITA would understand from the prior art at the time the invention was made, it seems to make sense that the meaning of claim terms should also be determined as of the date of invention. And indeed the Federal Circuit has held in the context of §§ 102 and 103 that “claims are to be given their ordinary and objective meaning as of the time of the invention.”²⁰

2. Enablement and Written Description

In order to decide whether a patentee has sufficiently disclosed and described her invention, we must know what the patent covers, because the statute requires the patent to enable one of ordinary skill in the art to make and use the full range of the claimed invention,²¹ and the court has construed the written description doctrine to require proof that the patentee possessed the full range of the claimed invention.²² Without knowing how broad the patent is, a court can’t determine whether a person of ordinary skill in the art would be able to make and use the full range of the invention. Similarly, it would be impossible to know whether the patentee in fact possessed the invention without defining the scope of that invention using the patent claims. Satisfaction of the enablement and written description requirements is determined at the time the patent application is first filed.²³ This is also true in other contexts in which enablement is at issue. In *In re Hogan*, for example, the court determined whether a patent applicant had enabled the claim in order to prevail in an interference proceeding (that is, whether he had in fact made the invention as claimed) by interpreting the term “polypropylene” as it was understood at the time the senior application was first filed, rather than as the term was later understood:

[The] 1953 application enabled those skilled in the art in 1953 to make and use ‘a solid polymer’ as described in claim 13. Appellants disclosed, as the only then existing way to make such a polymer, a method of making the

of claim terms is fixed as of the date the prior art becomes relevant—one year before the application is filed—rather than the date of invention.

20. *SmithKline Beecham Corp. v. Apotex Corp.*, 365 F.3d 1306 (Fed. Cir. 2004); *Plant Genetic Sys., N.V. v. DeKalb Genetics Corp.*, 315 F.3d 1335 (Fed. Cir. 2003); *Kopykake Enters., Inc. v. Lucks Co.*, 264 F.3d 1377, 1383 (Fed. Cir. 2001).

21. 35 U.S.C. § 112, para. 1 (2000).

22. *See, e.g., In re Curtis*, 354 F.3d 1347, 1355 (Fed. Cir. 2004).

23. *See, e.g., Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563–64 (Fed. Cir. 1991). Strictly speaking, satisfaction of those requirements is determined as of the earliest time to which the patentee claims priority. In some cases, patent applicants may add new descriptive matter to their applications by filing what is called a “continuation-in-part” (“CIP”) application. Claims in a CIP application must be enabled by the disclosure in the original application only if the patentee asserts that she invented the claimed subject matter as of the date of the original application.

crystalline form. To now say that appellants should have disclosed in 1953 the amorphous form which on this record did not exist until 1962, would be to impose an impossible burden on inventors and thus on the patent system.²⁴

Because the inquiry focuses on what the PHOSITA would understand at the time the patent application was filed, it seems to make sense that the meaning of claim terms should also be determined as of the date the application was filed. And in fact the Federal Circuit has held in the context of § 112 that the district court “properly gave objective meaning to [the claims] as they were understood at the time the patent application was filed.”²⁵ Indeed, the court adopted this timing in *Plant Genetics*, the same case in which it held that § 102 determinations are based on the meaning of claim terms at the time of invention. Courts have also applied the filing date to the related doctrine of claim definiteness.²⁶

3. Means-Plus-Function Claims

Patent claims generally define devices, structures, or methods. At times, however, patentees want to claim part of an invention by defining it in functional terms (for example, “means for processing data”) rather than by defining the actual structure of the device in the claim. Section 112, ¶ 6 of the patent statute permits a patentee to phrase claim elements in such a way and provides that the scope of such a claim element is determined by the corresponding structure described in the patent specification and equivalents thereof.²⁷ Thus, defining the scope of a patent claim term phrased in this “means-plus-function” format requires determining what the patentee disclosed in the specification, and what structures are equivalent to the ones disclosed. Understanding the scope of this type of claim requires determining what the PHOSITA would understand the specification to mean at the time the patent issues²⁸ and what would be equivalent to the structures disclosed in the specification as of that time.²⁹ Because of this, it makes a

24. *In re Hogan*, 559 F.2d 595, 606 (C.C.P.A. 1977); accord *United States Steel Corp. v. Phillips Petroleum Co.*, 865 F.2d 1247, 1251–52 (Fed. Cir. 1989).

25. *Plant Genetic Sys.*, 315 F.3d at 1345; see also *Chiron Corp. v. Genentech, Inc.*, 363 F.3d 1247 (Fed. Cir. 2004); *Schering Corp. v. Amgen Inc.*, 222 F.3d 1347, 1353 (Fed. Cir. 2000).

26. *Howmedica Osteonics Corp. v. Tranquil Prospects, Ltd.*, 401 F.3d 1367 (Fed. Cir. 2005).

27. 35 U.S.C. § 112, para. 6 (2000).

28. See, e.g., *Al-Site Corp. v. VSI Int'l, Inc.*, 174 F.3d 1308, 1320 (Fed. Cir. 1999) (“An equivalent structure or act under § 112 cannot embrace technology developed after the issuance of the patent because *the literal meaning of a claim is fixed upon its issuance.*” (emphasis added)).

29. *Id.* (noting that “a structural equivalent under § 112 must have been available at the time of issuance of the claim”; any other equivalent can be captured only under the doctrine of equiva-

certain amount of sense that the meaning of particular terms in the patent should also be determined at the time the patent issues, and indeed the Federal Circuit has made it clear that the meaning of such means-plus-function claim terms is determined as of the time the patent issues.³⁰ Unlike the validity doctrines discussed above, however, it is terms in the specification rather than claim terms themselves that are being construed.

4. Infringement

Finally, and most obviously, interpretation of patent claims is critical to deciding whether a defendant's product infringes the patent. Claim construction is often outcome-determinative in infringement cases; once the patent claims have been construed summary judgment for one side or the other is quite common. Claim construction determines the scope of the patent, and the scope of the patent in turn determines whether it covers the defendant's product. Whether an accused device infringes is tested as of the time of the alleged infringement; there are numerous cases in which devices first developed after the patent issues are nonetheless held to infringe the patent.³¹ Indeed, the application of patents to technologies first developed after the patent issues is integral to a number of long-standing patent doctrines, including the doctrine of equivalents, the rule of blocking patents, and the so-called "reverse doctrine of equivalents."³² Testing infringement at the time of

lents); *accord* *Chiuminata Concrete Concepts, Inc. v. Cardinal Indus., Inc.*, 145 F.3d 1303, 1310 (Fed. Cir. 1998).

30. *Al-Site*, 174 F.3d at 1320.

31. *See, e.g.*, *Laser Alignment, Inc. v. Woodruff & Sons, Inc.*, 491 F.2d 866 (7th Cir. 1974) (finding that a patent on using a beam of light to align pipe covered the use of a laser to align pipe, even though the laser had not been developed when the invention was made); *In re Hogan*, 559 F.2d 595, 606 (C.C.P.A. 1977) (concluding that an invention enabled at an early time with narrow scope covered a broader scope of later-developed products that fit within the (expanded) literal definition of the claimed invention, and arguing that "[t]o restrict appellants to the crystalline form disclosed . . . would be a poor way to stimulate invention, and particularly to encourage its early disclosure. To demand such restriction is merely to state a policy against broad protection for pioneer inventions . . ."); *Chiron Corp. v. Genentech, Inc.*, 266 F. Supp. 2d 1172 (E.D. Cal. 2002) (interpreting a patent that, when written in 1984, covered only mouse-derived antibodies, to cover all sorts of antibodies developed between 1984 and 1999, including chimeric and humanized antibodies).

32. *See, e.g.*, Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989 (1997); Robert Merges, *Intellectual Property Rights and Bargaining Breakdown: The Case of Blocking Patents*, 62 TENN. L. REV. 75 (1994); Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839 (1990). The reverse doctrine of equivalents excuses literal infringements where the defendant's product is so far changed in principle from the patented invention that it would be inequitable to find liability. *Westinghouse v. Boyden Power Brake Co.*, 170 U.S. 537, 562 (1898); *Scripps Clinic & Research Found. v. Genentech, Inc.*, 927 F.2d 1565 (Fed. Cir. 1991). The doctrine would make no sense if patents did not cover later-developed technologies at all.

infringement necessarily suggests that the claims should be interpreted as of the time of infringement; it is the correspondence between the claims and the accused device that is the essence of infringement. And some courts have in fact construed the meaning of patent claims for infringement purposes as of the time of infringement, not as of the time of invention, filing, or issue. In *Laser Alignment*, for example, the court interpreted the phrase “beam of light” to include a laser, a technology that did not exist at the time the patent issued.³³ Other courts come to the same conclusion not with respect to literal infringement but under the doctrine of equivalents, where it is well settled that the relevant time is the time of infringement.³⁴

The timing of claim construction, then, would appear to vary depending on the reason the claim is being construed. For some purposes we understand claim terms to mean what they meant to the PHOSITA at the time of invention. At other times we interpret claim terms as they are understood at the time the patent application is filed, at the time the patent issues, or at the time the patent is allegedly infringed. And because a significant period of time can elapse between each of these events—a year or two between invention and filing,³⁵ 2.77 years on average but sometimes more than ten years between filing and issue,³⁶ and several years between issue and infringement³⁷—it is quite common that the meaning of claim terms will differ depending on the time at which the courts define them. Under these long-standing principles, we cannot define the meaning of a patent claim in the

33. *Laser Alignment*, 491 F.2d at 866.

34. *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 37 (1997), holds that reasonable interchangeability of elements and accused products in the doctrine of equivalents is determined at the time of infringement, not earlier.

35. Patent law strongly encourages prompt filing once an invention is made. Unreasonable delay in filing a patent application after the invention is made will defeat a claim to priority under 35 U.S.C. § 102(g) (2000). *Peeler v. Miller*, 535 F.2d 647 (C.C.P.A. 1976) (delay caused by attorney backlog was not excusable). Under 35 U.S.C. § 102(b), a one-year grace period is given after an inventor makes some public use or sale of the invention. 35 U.S.C. § 102(b) (2000). But European law has no similar grace period, giving patent applicants a strong incentive to file as soon as possible after invention, and in any event before selling the invention or publishing it.

36. Allison & Lemley, *Who's Patenting What?*, *supra* note 10, at 2101 (patent prosecution takes 2.77 years on average); Lemley & Moore, *supra* note 10, at 113 (1.38% of all applications spend eight or more years in prosecution).

37. Allison & Lemley, *Empirical Evidence*, *supra* note 10, at 237 (finding that, on average, 12.3 years elapse between the filing of a patent application and the resolution of an infringement suit). To be sure, much of this time is spent in litigation after infringement has already occurred. *Cf.* John R. Allison et al., *Valuable Patents*, 92 GEO. L.J. 435 (2004) (finding that most patent lawsuits are filed rather quickly after the patent issues). But infringement generally continues during the pendency of the suit, so the “time of infringement” may actually encompass a range of dates beginning on the date the defendant starts making the product and extending many years into litigation.

abstract. Instead, a patent claim has different meanings depending on the reason we ask the question.

B. Defining Patent Claims Consistently

A second, equally venerable principle of patent law makes it clear that patent claims are to be construed consistently for validity and infringement purposes. Both patent owners and accused infringers have a strong incentive to interpret patent claims differently for different purposes. Patent owners would like their patent claims to be construed broadly in infringement proceedings, so that they cover defendants' products, but would generally like their claims to be construed narrowly when it comes to validity, to avoid the risk of either treading on the prior art or claiming more than the patentee has enabled or described. Accused infringers want the opposite—patents that are narrow and not infringed, but are broad enough to run afoul of §§ 102, 103, or 112.

The court has rejected efforts by both patentees and accused infringers to read patent claims inconsistently when it benefits them to do so. Rather, the claims of a particular patent must be read consistently in a particular case. The Federal Circuit has repeatedly rejected efforts by litigants to argue for one meaning in the validity context and a different meaning in the infringement context.³⁸ To paraphrase Donald Chisum, obviousness, enablement, and infringement are an “eternal golden braid” bound together by the language of the patent claims.³⁹ For the doctrines to be consistent, the claims obviously must have a consistent meaning for each patent. And indeed on at least one occasion the Federal Circuit has departed from the principles discussed in the last Section in order to ensure that a claim meaning was consistent over time. In *Kopykake Enterprises, Inc. v. Lucks Co.*, it held that “when a patent claim term understood to have a narrow meaning when the application is filed later acquires a broader definition, the literal scope of the term is limited to what it was understood to mean at the time of

38. See, e.g., *Bristol-Myers Squibb Co. v. Ben Venue Labs., Inc.*, 246 F.3d 1368 (Fed. Cir. 2001); *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1344 (Fed. Cir. 2001) (“Because the claims of a patent measure the invention at issue, the claims must be interpreted and given the same meaning for purposes of both validity and infringement analysis.”); *C.R. Bard, Inc. v. M3 Sys., Inc.*, 157 F.3d 1340 (Fed. Cir. 1998); *Beachcombers Int'l, Inc. v. WildeWood Creative Prods., Inc.*, 31 F.3d 1154 (Fed. Cir. 1994).

39. Donald S. Chisum, *Anticipation, Enablement and Obviousness: An Eternal Golden Braid*, 15 *AIPLA Q.J.* 57 (1987). Chisum refers to anticipation and obviousness, but the logic of the braid extends to infringement as well. See Roy H. Wepner, *The Patent Invalidity/Infringement Parallel: Symmetry or Semantics?*, 93 *DICK. L. REV.* 67 (1988).

filing.”⁴⁰ Inferential support for this result can also be found in *Texas Digital*, where the court explained that the dictionaries and treatises courts could use in defining claim terms were those published at the time the patent issued, not those published later.⁴¹ This approach makes sense only if the term has a meaning that is fixed in time.

In practice, courts have approached claim construction as if the claims had a single meaning throughout time. After the Supreme Court determined that claim construction was a question of law for the court,⁴² district courts began the now-ubiquitous practice of holding pretrial “*Markman* hearings” in which they explicated the meaning of patent claims. In my experience, courts use *Markman* hearings to define claim terms in a single way. They do not define those terms differently for different purposes. I have never been involved in or even heard of a case in which the court defined the same term in two different ways for purposes of different sections of the patent statute, despite the case law discussed in the last Section suggesting that courts should do exactly that. Indeed, I am not even aware of attorneys who have argued in a *Markman* hearing that a particular term should have different meanings for different purposes. As a practical matter, lawyers and courts seem to ignore the cases discussed in the previous Section, except perhaps to choose one particular time at which to fix the meaning in any given case.

The idea that words should have a consistent meaning also has strong intuitive resonance. People know—or think we know—what words mean, and we resist the postmodern idea that meanings are contingent and can change over time. This is particularly true in science, where we like to think that the rules are fixed and unyielding.⁴³ While the postmodernists are obviously right to some extent—the meaning of words is contextually driven and socially constructed—instinct tells us that to conclude that the same words in the same document have different meanings for different purposes leads us by the short road to chaos.

40. *Kopykake Enters., Inc. v. Lucks Co.*, 264 F.3d 1377, 1383 (Fed. Cir. 2001). *But see* *Superguide Corp. v. DirectTV Enters., Inc.*, 358 F.3d 870 (Fed. Cir. 2004) (concluding that *Kopykake* was limited to circumstances in which the patentee had expressly limited its invention to “conventional” or existing technology).

41. *Tex. Digital Sys., Inc. v. Telegenix, Inc.*, 308 F.3d 1193 (Fed. Cir. 2002). Other Federal Circuit panels have suggested different times besides issuance at which meaning should be tested. In *E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d 1364 (Fed. Cir. 2003), the court suggested that the date of application might be the correct date, or possibly even the date of invention. *Id.* at 1367 n.2. The discussion in that case was dictum, however, because the court noted that the meaning of the terms at issue had not changed over time.

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

43. *But cf.* PETER GALISON, *HOW EXPERIMENTS END* (1987) (discussing how context and expectation affect scientific experiments).

II. CHOOSING BETWEEN THE APPROACHES

Which approach is right? In this Part, I argue that courts should take a unified approach to claim construction, interpreting patent claims as they would have been understood by one of ordinary skill in the art at the time the patent application was first filed. Section II.A explains why a unified approach is preferable to variable meanings. I also argue in that Section that courts should take a uniform approach in all cases, not just those few cases in which a conflict actually arises between different meanings. Section II.B argues that the meaning of the claims should be fixed as of the time of filing and deals with some complications that arise from the prosecution process. Section II.C explains why a focus on filing date won't undermine patent incentives in the important case of later-developed technology.

A. Justifying Unified Claim Construction

The complex of rules described in Part I.A has considerable theoretical appeal.⁴⁴ In the abstract, it may make sense to judge the meaning of a patent claim term from different perspectives for different purposes.⁴⁵ But doing so is simply not practical. Adherence to the different meanings approach creates unsolvable problems in actually litigating and deciding patent cases. We managed to avoid confronting those problems for many years because we handed the entire question of claim construction to the jury, and blithely assumed that they understood and applied the complex of timing rules. The *Markman* decision made transparent the process of claim construction, and so exposed these difficulties. These practical problems fall into four categories.

First, permitting the same claim term to mean different things invites gaming of the claim construction process. Both patent owners and accused infringers face a tension in patent litigation between their validity arguments and their infringement arguments. The more broadly a patent is interpreted, the more likely it is to be infringed, but the more likely it also is to be invalid. Patent owners will try to avoid this tension by arguing that the invention should be construed narrowly for validity purposes but broadly for infringement purposes; accused infringers will argue the opposite. These

44. I am no fan of simplicity merely for the sake of simplicity and in fact have argued elsewhere that patent law needs fewer bright-line rules and more flexible standards that can adapt to the complex, industry-specific environment of innovation. See DAN L. BURK & MARK A. LEMLEY, *TAILORING INNOVATION LAW: SHAPING PATENT POLICY FOR SPECIFIC INDUSTRIES* (forthcoming 2006). The right question, as always, is comparative: what do we gain and what do we lose from making a particular rule more complex?

45. Or it may not. The automatic extension of patent scope over time as the meaning of words changes can do significant damage to social welfare, as it threatened to do in the *Chiron* case.

arguments may prove more persuasive than one might think; empirical evidence suggests that factfinders in patent cases tend to vote on party rather than issue lines, ruling entirely for or against a patentee.⁴⁶ Courts foreclose these efforts to have it both ways by demanding that parties define claim terms consistently throughout a lawsuit. If they can't do that, it will prove difficult to avoid having the parties twist the meaning of words in ways that support their interests in a particular case.

Second, defining patent claim terms to mean different things for different purposes significantly complicates the efforts of competitors to predict the scope and validity of patents. In recent years, the Federal Circuit has repeatedly emphasized the notice function of patent claims, limiting the reach of patent law's doctrine of equivalents because of concerns that competitors could not predict how that doctrine might be applied.⁴⁷ To be sure, there are many problems with the notice function of patents. It is not clear that competitors actually read patents,⁴⁸ and even if they do the existing opacity of claim construction and the doctrine of equivalents make it difficult already to predict the scope of a competitor's patents.⁴⁹ Making claim construction even more convoluted will hardly help matters.

Third, defining patent claim terms to mean different things for different purposes would complicate the modern practice of *Markman* hearings. Courts normally construe patent claims at a separate hearing held in advance

46. See Allison & Lemley, *Empirical Evidence*, *supra* note 10, at 245 (finding that in cases involving multiple patents, factfinders held the patents either all valid or all invalid in 86.7% of the cases). Indeed, the Federal Circuit has several times confronted cases in which the jury apparently treated the claims differently for validity and infringement purposes in order to rule for the same party on both issues. See, e.g., *Mycogen Plant Sci., Inc. v. Monsanto Co.*, 243 F.3d 1316 (Fed. Cir. 2001); *Motorola, Inc. v. Interdigital Tech. Corp.*, 121 F.3d 1461, 1466 (Fed. Cir. 1997).

47. See, e.g., *McClain v. Ortmyer*, 141 U.S. 419, 424 (1891) ("The object of the patent law in requiring the patentee to [distinctly claim an invention] is not only to secure to him all to which he is entitled, but to apprise the public of what is still left open to them."); *Sage Prods., Inc. v. Devon Indus., Inc.*, 126 F.3d 1420 (Fed. Cir. 1997); *Hoganas AB v. Dresser Indus., Inc.*, 9 F.3d 948, 951 (Fed. Cir. 1993) ("[C]laims . . . put[] competitors on notice of the scope of the claimed invention.").

48. There are two reasons why lawyers discourage their clients from reading competitors' patents. First, if a client is aware of a patent that might constitute prior art to its own invention, it must disclose that patent to the PTO, complicating the client's efforts to obtain its own patents. Second, if a client becomes aware of a patent that covers its product and continues to make that product, it may be held a willful infringer liable for treble damages. See Mark A. Lemley & Ragesh K. Tangri, *Ending Patent Law's Willfulness Game*, 18 *BERKELEY TECH. L.J.* 1085 (2003). While the Federal Circuit changed the law in 2004 to eliminate the obligation to waive privilege by obtaining a legal opinion and disclosing it to the court whenever put on notice of a patent, see *Knorr-Bremse Systeme Fuer Nutzfahrzeuge GmbH v. Dana Corp.*, 383 F.3d 1337 (Fed. Cir. 2004) (en banc), as a practical matter there are still strong reasons to obtain and disclose such letters and therefore waive privilege once one learns of a patent. The disincentive to read patents therefore persists.

49. See Burk & Lemley, *supra* note 2; John R. Thomas, *Claim Re-Construction: The Doctrine of Equivalents in the Post-Markman Era*, 9 *LEWIS & CLARK L. REV.* 153 (2005).

of trial or summary judgment.⁵⁰ In theory, at least, they construe those claim terms based on the understanding of the PHOSITA and without focusing on how the construction of the term will affect the outcome of the case.⁵¹ In order to construe claims differently for different purposes, courts would have to abandon this rule, because they would be unable to define the meaning of a term until they knew why the meaning mattered—for obviousness, enablement, or infringement purposes. It would also add to the administrative burden on district court judges. Busy district court judges already resist being asked to determine the meaning of multiple terms in multiple claims, particularly in the large fraction of cases that involve multiple patents. They require parties to select representative patents and representative claims for decision, demand that parties agree on the meanings of all but a few claim terms, and impose significant limits on briefing and argument over claim terms (imposing a twenty-five page limit on briefing regardless of the number of claim terms at issue, for example).⁵² These judges are likely to resist expanding their *Markman* role to construe each disputed term two or more times; even if they do so, the result will be to make *Markman* hearings longer and more complex.

Finally, even if judges are willing to add to the complexity of claim construction, their contingent constructions of particular terms are likely to confuse the jury. The court will have to instruct the jury that the same term means different things for different purposes. Juries may or may not understand this instruction, which is likely to strike them as counterintuitive, but at a minimum it will make their burden of deciding patent cases more onerous.

These costs are potentially substantial. Whether they are worth incurring depends largely on whether the different-constructions approach offers substantial benefits, an issue to which I turn in the next Section. Before I do, however, it is worth considering a hybrid approach. One of the reasons

50. There is no obligation to hold such a hearing before construing the patent claims, *see* *Ballard Med. Prods. v. Allegiance Healthcare Corp.*, 268 F.3d 1352, 1358 (Fed. Cir. 2001), but the overwhelming majority of district courts do so.

51. *Swimways Corp. v. Overbreak LLC*, 354 F. Supp. 2d 637, 641 (E.D. Va. 2005) (“[I]n no instance should claims be construed in light of the allegedly infringing device; it is only after the patent claims have been properly construed that they are applied to the accused device to determine whether infringement exists.”). *See also* JOHN W. SCHLICHER, *PATENT LAW: LEGAL AND ECONOMIC PRINCIPLES* 1:44 (2004). However, Schlicher notes that judges may look at the accused device in order to understand and focus the claim construction process, and the line between these two is elusive.

52. *See, e.g.*, Standing Order for Patent Cases ¶ 5, Sept. 7, 2004 (standing order of Judge Jeffrey S. White of the Northern District of California), available at [http://www.cand.uscourts.gov/cand/judges.nsf/f439a7615af0ad8188256d48005fd22b/25fd69a0d98a3c7f88256d48005fdcc/\\$FILE/Standing%20Orders%20for%20Patent%20Cases%20-%20JSW.pdf](http://www.cand.uscourts.gov/cand/judges.nsf/f439a7615af0ad8188256d48005fd22b/25fd69a0d98a3c7f88256d48005fdcc/$FILE/Standing%20Orders%20for%20Patent%20Cases%20-%20JSW.pdf) (last visited June 7, 2005).

courts and commentators have succeeded in ignoring the tension I describe in this paper is that relatively few cases actually present the conflict directly. The conflict only arises in those cases in which both infringement and validity are at issue, and the meaning of a claim term changes between invention and infringement in an outcome-determinative way. One possible approach would be to maintain the existing temporally-driven rules for the ordinary case, but to apply a uniform standard in the minority of cases in which the change in the meaning of the terms would affect the outcome of the case.⁵³ The Federal Circuit seemed to take this approach in *Kopykake*,⁵⁴ where it demanded uniformity in the case before it without rejecting the general principle that the meaning of patent claim terms should be judged at different times for different purposes. And in *Inverness* it noted that “[o]ur decisions have not always been consistent” with respect to the timing of claim construction, but declined to resolve that inconsistency because the meaning of the term was the same at all relevant times in the case before it.⁵⁵

I think this hybrid approach is insufficient. It complicates claim construction even more than the temporally-driven approach does. The hybrid approach requires courts to determine the meaning of some claim terms at different times, incurring some of the complexity and gaming costs described above. In addition, it imposes a second layer of rules to be applied to some but not all claim constructions. The meaning of patent claims can’t be determined *ex ante* at all, because neither competitors nor the courts can know whether the uniform rule or the variant rule would apply until they determined whether two different meanings would be at issue in the particular case that comes before the court. The meaning of a term would exist in a sort of quantum superposition, collapsing to a particular meaning fixed at a particular point in time only when the factfinder makes the decision to look.⁵⁶ The hybrid approach might also mean that even for the same purpose, the same term may take on different meanings in cases against different defendants. The meaning for, say, infringement purposes would be fixed at a uniform time (the filing date) in one case and would be deter-

53. This approach, like my preferred approach, would still require deciding from what perspective that uniform standard will be tested, albeit in a smaller group of cases. I discuss that issue in the next Section.

54. *Kopykake Enters., Inc. v. Lucks Co.*, 264 F.3d 1377, 1383 (Fed. Cir. 2001).

55. *Inverness Med. Switz. GmbH v. Warner Lambert Co.*, 309 F.3d 1373, 1378 n.2 (Fed. Cir. 2002).

56. This was the fate of Schrödinger’s unfortunate (and mercifully apocryphal) cat. *See, e.g.*, JOHN GRIBBIN, *IN SEARCH OF SCHRÖDINGER’S CAT: QUANTUM PHYSICS AND REALITY* (1984). Regardless whether the cat would truly be both alive and dead, a question upon which physicists disagree, the claim construction would exist in an ambiguous state until we knew the context of the lawsuit in which the claim would be construed.

mined as of the infringement date in another case that didn't present the problem of inconsistent meanings.⁵⁷ Such a result would be uncertain, manipulable, and intellectually unsatisfying.

B. *Selecting a Time for Determining Claim Meaning*

If the law is to settle on a particular time at which the meaning of claim terms should be determined, what should that time be? There are four obvious choices, mapping to the four different times at which the law currently fixes meaning: at the time of invention, at the time of filing, at the time of issue, or at the time of infringement. As I noted in Section I.A, courts have used each approach in different contexts. Courts that seem to apply a uniform standard have often set that standard as of the time the patent issues, looking to dictionaries from that time,⁵⁸ though other Federal Circuit panels have suggested that the invention date or the filing date might be the appropriate measure.⁵⁹ In this Section, I argue that the best option is to determine the meaning of patent claim terms as of the date the patent application is filed.

To begin, it seems rather easy to dismiss the idea that the meaning of claim terms should be defined for all purposes as of the date of infringement. Doing so would require the scope of patents to change over time, not only for infringement purposes (in which we have long accepted just such an oddity)⁶⁰ but also for validity purposes. The PTO would never be able to determine the validity of a patent, since the meaning of the patent claims could not be fixed at a point in time. Even after it issued, a patent's scope would not be fixed, but could differ from infringer to infringer as time passes. As a result, the same patent could be valid at certain times and invalid at others, depending on the meaning of terms at the time of infringement. Further, claims valid at the time of issuance would become invalid for lack

57. This latter problem is likely to come up only in a few cases since, if a term has changed meanings over time in an outcome-determinative way, those changes are likely to come up in each subsequent infringement case.

58. *Tex. Digital Sys., Inc. v. Telegenix, Inc.*, 308 F.3d 1193 (Fed. Cir. 2002). The role of dictionaries was sharply limited by the Federal Circuit en banc this year. *Phillips v. AWH Corp.*, No. 03-1269, 03-1286, 2005 U.S. App. LEXIS 13954 (Fed. Cir. July 12, 2005) (en banc). But dictionaries will still be relevant in some circumstances under the *Phillips* standard, and so determining the proper date for the dictionary still matters.

59. *Metabolite Labs., Inc. v. Lab. Corp. of Am. Holdings*, 370 F.3d 1354 (Fed. Cir. 2004); *E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d 1364 (Fed. Cir. 2003); *Rexnord Corp. v. Laitram Corp.*, 274 F.3d 1336, 1342 (Fed. Cir. 2001); *Schering Corp. v. Amgen Inc.*, 222 F.3d 1347, 1353 (Fed. Cir. 2000); *see also Universal Oil Prods. Co. v. Globe Oil & Ref. Co.*, 137 F.2d 3, 6 (7th Cir. 1943) (“[T]he meaning which the inventor gives to his words can not [sic] be made to depend upon subsequent events, but should appear when the application is filed.”).

60. *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 37 (1997).

of enablement as the meaning of those claim terms changed. As the Court of Customs and Patent Appeals warned in *In re Hogan*, “[t]here cannot, in an effective patent system, be such a burden placed on the right to broad claims.”⁶¹ No court has suggested that the meaning of patent claims for validity purposes should be mutable over time in this way, and the debilitating uncertainty associated with these changes counsels against adopting it.

A second possibility is that the meaning of patent claim terms could be fixed as of the time the patent issues. *Texas Digital* implicitly took this approach, though it did not justify it expressly. The Federal Circuit has also endorsed use of the issue date in other cases as well.⁶² Using the date of issue has a certain logic to it; after all, it is as of the issue date that the language of the patent claims is established in fixed form, so perhaps it makes sense that that is the date on which we should define the meaning of those claims. Nonetheless, I do not think issue date is the right choice. A substantial period of time can elapse between the time the patent is filed and when it issues. While the time a patent spends in prosecution is 2.77 years on average,⁶³ litigated patents spend substantially more time (3.6 years on average),⁶⁴ and a small but important subset of patents spend eight or more years in prosecution.⁶⁵ Importantly, if a patent spends a long time in prosecution, it is generally because the applicant has voluntarily chosen to extend prosecution by filing multiple continuation applications.⁶⁶ The fact that the patentee has substantial power to control when the patent issues and with what claims⁶⁷ gives rise to concerns about gaming the system. In *Chiron v. Genentech*, for example, Chiron filed a patent application in 1984, but rewrote the claims of the still-pending patent in 1999 to cover “monoclonal antibodies,” a term that had a very different and much broader meaning in 1999 than it did in 1984.⁶⁸ Giving that term its 1999 meaning is unfair in two

61. *In re Hogan*, 559 F.2d 595, 606 (C.C.P.A. 1977).

62. *See, e.g.*, *Inverness Med. Switz. GmbH v. Warner Lambert Co.*, 309 F.3d 1373, 1378 n.2 (Fed. Cir. 2002) (choosing issue date, but noting the conflict and concluding that it didn’t matter for the resolution of this case).

63. Allison & Lemley, *Who’s Patenting What?*, *supra* note 10, at 2118.

64. Allison & Lemley, *Empirical Evidence*, *supra* note 10, at 237.

65. Lemley & Moore, *supra* note 10, at 113 (stating that 1.38% of all patents spend more than eight years in prosecution).

66. *Id.*; *see also* Mark A. Lemley, *An Empirical Study of the Twenty-Year Patent Term*, 22 AIPLA Q.J. 369 (1994) (finding that half of the patents that spend the most time in prosecution are submarine patents).

67. *See, e.g.*, Lemley & Moore, *supra* note 10 (explaining how patentees can use continuation practice to control when and if the patent issues, and to wear down examiners who object to particular claims).

68. *Chiron Corp. v. Genentech, Inc.*, 266 F. Supp. 2d 1172 (E.D. Cal. 2002).

respects: it may disadvantage competitors by allowing the patentee to include within the scope of the patent technologies she did not invent, and it may disadvantage the patentee by imposing an impossible burden of describing and enabling, as of 1984, technologies that were not developed until much later.⁶⁹ The prospect of such manipulation by patent owners counsels against defining patent terms as of the issue date. Issue date would also seem an odd choice because it is not normally the default in the temporal-differences model. Only the interpretation of the support in the patent specification for a means-plus-function claim is tested as of the time of issuance, so adopting the issue date would require a greater change in practice than other baselines. Finally, setting the meaning of terms as of the issue date would effectively foreclose any possibility of claim construction at the PTO, since it would have to construe a term whose meaning wouldn't be established until after it was done examining the claim. The PTO doesn't engage in claim construction today, applying instead the "broadest reasonable construction" that can be given to a claim.⁷⁰ But commentators have suggested that it could do so,⁷¹ something that would be feasible only if the meaning of a claim term were fixed sometime before prosecution was completed.

This leaves us with two options—determining the meaning of claims as of the time of invention or the time of filing. Both seem plausible to me. Both are widely used already in the temporal-differences model.⁷² Both are focused at or about the time the invention is made, which seems the logical time to base at least validity determinations. I am inclined to believe that the

69. Indeed, both of these things happened in *Chiron*: the court found infringement because it gave "monoclonal antibodies" its broader 1999 meaning, but ultimately invalidated the patent on enablement and written description grounds. *Id.* at 1192. The written description decision was affirmed by the Federal Circuit. *Chiron Corp. v. Genentech, Inc.*, 363 F.3d 1247 (Fed. Cir. 2004).

70. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004).

71. See Joseph Scott Miller & James A. Hilsenteger, *The Proven Key: Roles and Rules for Dictionaries in the Patent Office and the Courts*, 54 AM. U. L. REV. (forthcoming 2005) (manuscript on file with author) (arguing that an applicant should have to commit to definitions of terms during patent prosecution).

72. A number of cases rely on the filing date as the relevant date for claim construction. See, e.g., *PC Connector Solutions LLC v. Smartdisk Corp.*, 406 F.3d 1359 (Fed. Cir. 2005); *Bayer AG v. Biovail Corp.*, 279 F.3d 1340, 1348 (Fed. Cir. 2002); *Schering Corp. v. Amgen Inc.*, 222 F.3d 1347, 1353 (Fed. Cir. 2000); *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1464 (Fed. Cir. 1998) (en banc) (Mayer, C.J., concurring). Other cases rely on the invention date. See, e.g., *Metabolite Labs., Inc. v. Lab. Corp. of Am. Holdings*, 370 F.3d 1354 (Fed. Cir. 2004); *ResQNet.com, Inc. v. Lansa, Inc.*, 346 F.3d 1374, 1378 (Fed. Cir. 2003); *Rexnord Corp. v. Laitram Corp.*, 274 F.3d 1336, 1342 (Fed. Cir. 2001). The Federal Circuit's en banc decision in *Markman* is frequently cited by district courts for the proposition that the meaning of claims is determined at the time of the invention. See, e.g., *Microstrategy, Inc. v. Bus. Objects, S.A.*, 331 F. Supp. 2d 432 (E.D. Va. 2004); *Honeywell Int'l, Inc. v. IIT Indus., Inc.*, 330 F. Supp. 2d 865 (E.D. Mich. 2004); *Agere Sys., Inc. v. Broadcom Corp.*, No. Civ.A.03-3138, 2004 WL 1658530 (E.D. Pa. July 20, 2004).

filing date is the right choice. It is a fundamental rule of claim construction that the patentee can be her own lexicographer.⁷³ To do so, the patentee defines the claim terms in the specification at the time of filing. The patentee hasn't written the claims yet at the time of invention, and if the invention is truly innovative it may take time to come up with the right terminology.⁷⁴ Choosing the time of filing gives the PHOSITA some time to learn the meaning of new terms as knowledge of the invention diffuses through the scientific community and permits the patentee an opportunity to help determine the meaning of those claim terms. Subsequent discussion in the prosecution history can clarify what the terms meant when filed, but it is the time of filing that should be the key. Finally, it is easy to determine the date of filing, and harder to determine the date of invention. Indeed, if we move to a first to file system, as seems possible at this writing,⁷⁵ the date of invention will be irrelevant for almost all purposes, and it would be better not to have to identify that date for purposes of claim construction.

Choosing either the time of invention or the time of filing requires us to deal with one potential anomaly: patent claims can be amended after the time of filing. What happens when a claim term is added after filing? This can occur in three different settings. First, a patentee might file a reissue application, seeking different claim language. A reissue patent relates back to the original if it does not broaden the claims, but is subject to intervening rights if it does broaden the claims.⁷⁶ A reissue application should count as a new filing for purposes of the date at which meaning is to be determined only if it is a broadening reissue whose effective date is later than the original patent. Second, a patentee might add new material to the specification to accompany the claims by filing what is called a "continuation-in-part" application. In this case the solution is easy—the "filing date" of a CIP application is the date the matter supporting the particular claim term is added to the patent. Finally, a patent applicant may amend her claims during prosecution without changing the specification. If she does, the new claims must find support in the initial application. While the claims may be added

73. See, e.g., *Johnson Worldwide Assocs., Inc. v. Zebco Corp.*, 175 F.3d 985, 990 (Fed. Cir. 1999); cf. *Miller & Hilsenteger*, *supra* note 71 (arguing that patentees should pick a dictionary as of their filing date to be used to construe the patent).

74. An additional problem with invention date is that figuring out when an invention is made turns out to be complicated, based on a combination of conception dates, reduction to practice dates, diligence in reduction to practice, and abandonment after reduction to practice. 35 U.S.C. § 102(g) (2000). Courts need to make these determinations only in a small subset of cases, see Mark A. Lemley & Colleen V. Chien, *Are the U.S. Patent Priority Rules Really Necessary?*, 54 *HASTINGS L.J.* 1299 (2003), and it would be simpler if we didn't force them to do so in other cases.

75. See H.R. 2795, 109th Cong. (1st Sess. 2005) (proposing to change to a first-inventor-to-file system).

76. 35 U.S.C. § 252 (2000).

during prosecution, they presumably have a meaning based on the specification written at the time of filing, so the focus on filing date shouldn't prove problematic. If it is—if the patent includes claim terms that would not be understood by the PHOSITA at the time of filing based either on his outside knowledge or on the disclosures of the specification—the patent claim is invalid in any event for lack of enablement.⁷⁷

The Federal Circuit may have made the right choice in its recent en banc decision in *Phillips*.⁷⁸ That opinion says: “We have made clear, moreover, that the ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question *at the time of the invention, i.e., as of the effective filing date of the patent application*.”⁷⁹ The issue was not briefed in the case, and the court did not cite the numerous cases holding the contrary. So it is possible to dismiss this statement as dictum. Further, the fact that the court seemed to think invention date and filing date were the same leaves its precise conclusion a bit uncertain. Nonetheless, I am optimistic that the court's statement reflects not only a resolution of the conflicting case law, but the correct resolution.⁸⁰

C. The Scope of Patents Under a Filing-Date Standard

Choosing to define patent claim terms as they would be understood at the time the patent application was filed means that the literal meaning of patent claims will not expand over time as the meaning of those terms changes.⁸¹ Cases like *Hogan* and *Chiron* that expand the literal meaning of

77. 35 U.S.C. § 112, para. 1 (2000) requires that the patentee teach a person of ordinary skill in the art how to make and use the invention without undue experimentation. *In re Wands*, 858 F.2d 731 (Fed. Cir. 1988).

78. *Phillips v. AWH Corp.*, No. 03-1269, 03-1286, 2005 U.S. App. LEXIS 13954 (Fed. Cir. July 12, 2005) (en banc).

79. *Id.* at *22 (emphasis added).

80. The Federal Circuit has recently resolved many of the conflicts that characterized its jurisprudence in the 1990s, lending more clarity and predictability to patent law. In addition to this issue, see *id.* (resolving the dispute over interpretive sources for claim construction); *Knorr-Bremse Systeme Fuer Nutzfahrzeuge GmbH v. Dana Corp.*, 383 F.3d 1337 (Fed. Cir. 2004) (en banc) (resolving problematic rules regarding willfulness); *Johnson & Johnston Assocs., Inc. v. R.E. Serv. Co.*, 285 F.3d 1046 (Fed. Cir. 2002) (en banc) (resolving conflict over doctrine of dedication to the public domain); *Burk & Lemley, Inherency*, *supra* note 17 (discussing the court's recent clarification of the inherency doctrine).

81. The *effective* scope of those claims may still expand over time for another reason: competitors may develop new products unknown at the time of the patentee's invention that fit within the literal language of the patent claims. Thus, a patentee may claim a genus consisting of 1,000 species, including some that neither the patentee nor anyone else has specifically identified. Over time, as new species within the genus are discovered, the practical scope of the patent is broadened to cover new products. But the legal scope of the claimed invention remains the same.

those claims, creating a “temporal disparity” between meaning for validity purposes and meaning for infringement purposes,⁸² will have to be rejected.⁸³ Some will consider this a good thing because it reduces the likelihood of blocking patents⁸⁴ and limits the ability of patent “trolls” to claim to own something that they did not in fact invent.⁸⁵ But limiting inventors to owning what they thought of can also present problems, particularly for pioneering inventions at an early stage in the development of a technology. The protection provided by a patent may be hollow if it does not confer the ability to prevent logical applications of the principle of the invention to new and unforeseen circumstances.⁸⁶

This does not mean, however, that the patents themselves cannot cover later-developed technologies. Patentees can use the doctrine of equivalents to reach such technologies. Indeed, covering equivalent technology not contemplated when the patent claims were written is one of the major benefits of the doctrine of equivalents. While the Federal Circuit has gone to significant lengths in recent years to cabin the scope of the doctrine of equivalents in order to prevent abuse of the doctrine, those restrictions have little or no application to the case of later-developed technology. The doctrine of prosecution history estoppel, which precludes a patentee who narrows her claims from later recapturing that ground under the doctrine of equivalents,⁸⁷ contains an exception permitting the doctrine of equivalents to apply to technologies that were not reasonably foreseeable at the time the claims were changed.⁸⁸ The rule that the doctrine of equivalents cannot extend to

82. Robert P. Merges, *Rent Control in the Patent District: Observations on the Grady-Alexander Thesis*, 78 VA. L. REV. 359, 379 n.73 (1992).

83. Some decisions have taken the position that meaning is “axiomatically” the same for purposes of validity and infringement, an approach that impliedly rejects *Hogan*. See, e.g., *Smith-Kline Beecham Corp. v. Apotex Corp.*, 403 F.3d 1331 (Fed. Cir. 2005); *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1330 (Fed. Cir. 2003). Indeed, Judge Bryson, concurring in *Chiron*, would have reached this result expressly, construing the patent claims “as they would have been understood by one of skill in the art at the time of the invention, and not construing them to reach the as-yet-undeveloped technology that the applicant did not enable.” *Chiron Corp. v. Genentech, Inc.*, 363 F.3d 1247, 1263 (Fed. Cir. 2004) (Bryson, J., concurring); see also *In re Hogan*, 559 F.2d 595, 609–11 (C.C.P.A. 1977) (Miller, J., concurring in part). This approach, with which I agree, would not have changed who won the *Chiron* case, but would have changed the basis for that result from invalidity to noninfringement.

84. On blocking patents, see Merges & Nelson, *supra* note 32.

85. See, e.g., Feldman, *supra* note 12.

86. See Matthew J. Conigliaro et al., *Foreseeability in Patent Law*, 16 BERKELEY TECH. L.J. 1045 (2001).

87. *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17 (1997).

88. *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722 (2002); *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 344 F.3d 1359 (Fed. Cir. 2003) (en banc); see also Conigliaro et al., *supra* note 86.

cover the prior art⁸⁹ will not apply to later-developed technology, which by definition cannot be in the prior art. And the doctrine of dedication to the public domain, which prevents a patentee from covering under the doctrine of equivalents an implementation described in the specification but not claimed in the patent,⁹⁰ by definition will not apply to technologies not contemplated at the time the patent was filed. Freed of these substantial limitations, the doctrine of equivalents remains robust enough to take the place of decisions like *Hogan* in ensuring that pioneering patents retain effective scope as improvers develop next-generation technologies.

The corollary concerns the continued importance of the reverse doctrine of equivalents. The reverse doctrine of equivalents is a rare but potentially important defense to infringement where the accused infringer has radically improved the patented technology.⁹¹ The Federal Circuit has recently questioned the continuing vitality of the doctrine, however. In *Tate Access Floors*, Judge Gajarsa suggested that the limitations of § 112 obviated the need for the reverse doctrine of equivalents because they prevented patentees from including later-developed technologies within the literal scope of the patent.⁹² Under existing law, this is not true. Because the meaning of claim terms for § 112 purposes is determined at the time of filing, while the meaning for infringement purposes is determined later, the literal scope of the patent may expand over time in ways that the enablement and written description requirements cannot effectively control. Were the court to adopt a clear rule of uniform meaning, this problem would go away, and the reverse doctrine of equivalents would become less important.⁹³

89. See, e.g., *Wilson Sporting Goods Co. v. David Geoffrey & Assocs.*, 904 F.2d 677 (Fed. Cir. 1990); cf. *Tate Access Floors, Inc. v. Interface Architectural Res., Inc.*, 279 F.3d 1357, 1367 (Fed. Cir. 2002) (limiting *Wilson* to doctrine of equivalents cases; if literal claims of a patent cover the prior art the remedy is to hold the claims invalid).

90. *Johnson & Johnston Assocs. v. R.E. Serv. Co.*, 285 F.3d 1046 (Fed. Cir. 2002) (en banc).

91. See Lemley, *supra* note 32; Merges, *supra* note 32; Robert P. Merges, *A Brief Note on Blocking Patents and Reverse Equivalents: Biotechnology as an Example*, 73 J. PAT. & TRADEMARK OFF. SOC'Y 878 (1991).

92. *Tate Access Floors*, 279 F.3d at 1368. Since that decision the Federal Circuit has made reference to the reverse doctrine of equivalents on several occasions, however, suggesting its continued vitality. See, e.g., *Biogen, Inc. v. Berlex Labs., Inc.*, 318 F.3d 1132 (Fed. Cir. 2003); *Plant Genetic Sys., N.V. v. DeKalb Genetics Corp.*, 315 F.3d 1335 (Fed. Cir. 2003); *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313 (Fed. Cir. 2003).

93. It still wouldn't be the case that the doctrine served no purpose, however. Even with unified meaning, the reverse doctrine of equivalents will still be important in cases in which the accused infringer makes a radical improvement that clearly falls within the meaning of the claims as written. But the number of cases in which the reverse doctrine might apply would decline.

III. CONCLUSION

Two different, conflicting legal regimes for construing patent claims have coexisted for some time. The growth of *Markman* hearings heightens this conflict by requiring express claim construction by judges. The Federal Circuit must choose between the benefits of integrated claim construction and the niceties of time-differentiated claim construction. The only practical approach is to abandon differentiation in the interest of a simple, internally consistent understanding of patent claims.

The logical way to unify the meaning of patent claim terms is to fix that meaning at the time of filing. Doing so does not mean we have to abandon the principle that patents can cover later-developed technologies, though it does mean we must seek the source of that principle in the doctrine of equivalents rather than in the accident of changing meaning. That's a feature of my approach, not a bug. The original purpose of the doctrine of equivalents was to reach later-developed technologies,⁹⁴ and it is still most effective in doing so. The benefit we will gain from giving patent claims a consistent meaning is substantial.

94. Martin J. Adelman & Gary L. Francione, *The Doctrine of Equivalents in Patent Law: Questions That Pennwalt Did Not Answer*, 137 U. PA. L. REV. 673 (1989).