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FENCE POSTS OR SIGN POSTS? RETHINKING PATENT CLAIM CONSTRUCTION*

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INTRODUCTION

Patents are, in theory, a legal right to exclude competitors from using the patentee's invention. Exactly what the patentee gets to prevent others from using depends, however, on how the law defines the scope of the patent right. In modern American patent doctrine, we define what the patentee owns not by what she actually built or disclosed, but by what she *claimed*. Courts and commentators regularly analogize patent claims as akin to the "metes and bounds" of a real property deed,[1] defining the outer boundaries of a "property" right conferred on the patentee.[2] According to this view, known as the *peripheral* claiming approach, words of a claim form a sort of conceptual "fence" that marks the edge of the patentee's rights. And for the last dozen years, judges have had the responsibility of defining that periphery, interpreting the perimeter of patent claims in a pretrial proceeding known as a *Markman* hearing.[3]

It isn't working. Despite repeated efforts to set out the rules for construing patent claims, culminating in the Federal Circuit's en banc *Phillips* decision in 2005,[4] parties and courts seem unable to agree on what particular patent claims mean. Patent law has provided none of the certainty associated with the definition of boundaries in real property law. Literally every case involves a fight over the meaning of multiple terms, and not just the complex technical ones. Recent Federal Circuit cases have had to decide plausible disagreements over the meanings of the words "a,"[5] "or,"[6] "to,"[7] "including,"[8] and "through,"[9]

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[1] *See, e.g.*, CAE Screenplates, Inc. v. Heinrich Fiedler GmbH & Co. KG, 224 F.3d 1308, 1319 (Fed. Cir. 2000) (drawing this analogy).

[2] While patents are sometimes referred to as property rights, in fact they are not property in the way we traditionally think of land or chattels. *See* JAMES BESSEN & MICHAEL J. MEURER, PATENT FAILURE: HOW JUDGES, BUREAUCRATS, AND LAWYERS PUT INNOVATORS AT RISK ch. 2 (2008) (discussing ways in which patents differ from traditional notions of property); Mark A. Lemley, *Property, Intellectual Property, and Free Riding*, 83 TEX. L. REV. 1031, 1036-37 (2005) (listing problems created by treating and thinking about patents in the same manner as traditional property). *But cf.* Michael A. Carrier, *Cabining Intellectual Property Through a Property Paradigm*, 54 DUKE L.J. 1 (2004) (arguing that real property doctrines can be used by analogy to limit intellectual property (IP)).

[3] The procedure is named after *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996), in which the Supreme Court found that the interpretation of patent claims is a matter of law to be decided by the judge.

[4] Phillips v. AWH Corp., 415 F.3d 1303 (Fed. Cir. 2005) (en banc).

[5] *See* N. Am. Vaccine, Inc. v. Am. Cyanamid Co., 7 F.3d 1571, 1581 (Fed. Cir. 1993).

[6] *See* Kustom Signals, Inc. v. Applied Concepts, Inc., 264 F.3d 1326, 1331 (Fed. Cir. 2001).

to name but a few. Claim construction is sufficiently uncertain that many parties don't settle a case until after the court has construed the claims, because there is no baseline for agreement on what the patent might possibly cover. Even after claim construction, the meaning of the claims remains uncertain, not only because of the very real prospect of reversal on appeal but also because lawyers immediately begin fighting about the meaning of the words used to construe the words of the claims.

The problem is not just lack of understanding. Rather, claim construction may be inherently indeterminate: it may simply be impossible to cleanly map words to things.[10] Patent attorneys seize on such indeterminacy to excuse infringement or to expand their client's exclusive rights. The Federal Circuit reworks patent claims that have already been construed by district court judges, and the patent system increasingly revolves around the definition of terminology rather than the substance of what the patentee invented and how significant that invention really is. The key feature of peripheral claiming, setting out clear boundaries to warn the public of what is and is not claimed—the "notice function" of patents that has received so much attention in recent years[11]—increasingly seems to be an illusion.[12] And it is a dan-

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[7] *See* Chef Am., Inc. v. Lamb-Weston, Inc., 358 F.3d 1371, 1374 (Fed. Cir. 2004); Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1459 (Fed. Cir. 1998) (en banc).

[8] *See* Toro Co. v. White Consol. Indus., Inc., 199 F.3d 1295, 1300-02 (Fed. Cir. 1999).

[9] *See* Sage Prods., Inc. v. Devon Indus., Inc., 126 F.3d 1420, 1430-31 (Fed. Cir. 1997).

[10] *See* David L. Schwartz, *Practice Makes Perfect? An Empirical Study of Claim Construction Reversal Rates in Patent Cases*, 107 MICH. L. REV. 223, 259 (2008) ("[C]laim construction may be inherently indeterminate."). As philosopher Bertrand Russell put it, "[e]verything is vague to a degree you do not realize till you have tried to make it precise." BERTRAND RUSSELL, THE PHILOSOPHY OF LOGICAL ATOMISM 38 (David Pears ed., Open Court 1985). The Supreme Court recognized the problem in *Festo*, noting that "[u]nfortunately, the nature of language makes it impossible to capture the essence of a thing in a patent application." Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 535 U.S. 722, 731 (2002).

[11] *See, e.g.*, PSC Computer Prods., Inc. v. Foxconn Int'l, Inc., 355 F.3d 1353, 1358 (Fed. Cir. 2004) ("One important purpose of the written description is to provide notice to the public as to the subject matter of the patent, while the claim provides notice as to the scope of the invention."); Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 344 F.3d 1359, 1369-70 (Fed. Cir. 2003); *Sage Prods.*, 126 F.3d at 1429-30 (discussing how prosecution history estoppel helps to fulfill the public-notice function of patents). Long before the creation of the Federal Circuit, the Supreme Court itself emphasized the notice function, and expressed concern about a "zone of uncertainty which enterprise and experimentation may enter only at the risk of infringement claims." United Carbon Co. v. Binney & Smith Co., 317 U.S. 228, 236 (1942).

[12] Jim Bessen and Mike Meurer have colorfully characterized this problem in their assertion that "if you can't tell the boundaries, it ain't property." BESSEN & MEURER,

gerous illusion, because it means that courts define the scope of legal rights not by reference to the invention but by reference to semantic debates over the meaning of words chosen by lawyers.

If patent-claim terms lack the virtue of certainty and are in fact doing mischief in the patent system, perhaps we should begin to rethink the whole enterprise of peripheral claiming and the process of claim construction that accompanies it.

There is an alternative. Before 1870, the scope of U.S. patents was determined using a system of "central claiming." Under a central-claiming approach, the patentee does not delineate the outer reach of what it claims. Rather, the patentee discloses the central features of the invention—what distinguishes it from the prior art—and the courts determine how much protection the patent is entitled to by looking at the prior art that cabins the invention, how important the patentee's invention was,[13] and how different the accused device is. In some countries elements of that system remain to this day,[14] and indeed there are vestiges of central claiming in the U.S. patent system.[15]

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supra note 2, at 8. Although this catch phrase captures a fundamental difference between patents and real property, as a matter of property theory it is at best incomplete; we note the rather large body of legal and economic scholarship discussing the important benefits of vagueness in the boundaries of both real and intellectual property. *See, e.g.*, Dan L. Burk, *Muddy Rules for Cyberspace*, 21 CARDOZO L. REV. 121 (1999); Jason Scott Johnston, *Bargaining Under Rules Versus Standards*, 11 J.L. ECON. & ORG. 256 (1995); Marc R. Poirier, *The Virtue of Vagueness in Takings Doctrine*, 24 CARDOZO L. REV. 93 (2002); Carol M. Rose, *Crystals and Mud in Property Law*, 40 STAN. L. REV. 577, 594 (1988); Michael Spence & Timothy Endicott, *Vagueness in the Scope of Copyright*, 121 L.Q. REV. 657, 661 (2005).

[13] This is the now-moribund doctrine of "pioneer patents," under which important advances received broader protection than more modest improvements. *See, e.g.*, Miller v. Eagle Mfg. Co., 151 U.S. 186, 207 (1894) ("If the invention is broad or primary in its character, the range of equivalents will be correspondingly broad, under the liberal construction which the courts give to such inventions."); Perkin-Elmer Corp. v. Westinghouse Elec. Corp., 822 F.2d 1528, 1532 (Fed. Cir. 1987) ("A pioneer invention is entitled to a broad range of equivalents."); John R. Thomas, *The Question Concerning Patent Law and Pioneer Inventions*, 10 HIGH TECH. L.J. 35, 37 (1995). *But see* Sun Studs, Inc. v. ATA Equip. Leasing, Inc., 872 F.2d 978, 987 (Fed. Cir. 1989) (referring to the pioneer-patents rule as "ancient jurisprudence"), *overruled on other grounds by* A.C. Aukerman Co. v. R.L. Chaides Constr. Co., 960 F.2d 1020 (Fed. Cir. 1992).

[14] *See* TOSHIKO TAKENAKA, INTERPRETING PATENT CLAIMS: THE UNITED STATES, GERMANY AND JAPAN (1995) (describing Germany's "central claiming" system).

[15] For a discussion, see Jeanne C. Fromer, *Claiming Intellectual Property*, 76 U. CHI. L. REV. (forthcoming 2009), *available at* http://papers.ssrn.com/abstract_id=1273449. Fromer correctly identifies design patents and means-plus-function claims as being based in central claiming, although we are less persuaded by her characterization of dependent claims and best-mode jurisprudence as elements of central claiming. In

Central claiming is also the norm in U.S. copyright, trademark, and trade secret law.

If the goal of peripheral claiming was to establish fence posts marking the boundary of the patent, we can think of central claiming as replacing fence posts with sign posts identifying new inventions.[16] Whereas peripheral claiming purports to mark the outermost boundary of the patentee's claims, central claiming describes the core or gist of the patentee's contribution to technology. In this Article, we argue that the way for the patent system to move ahead may be by looking behind. Rather than relying on the illusion of peripheral fence posts, patent law may do better to once again look to central sign posts.

Central claiming would be a radical change, and perhaps the country is not ready to take such a step. Indeed, we are not ourselves fully persuaded that the benefits of central claiming outweigh the costs. But it is useful as a thought experiment, bringing our attention back to the patentee's invention rather than words written by lawyers. Once we are willing to look beyond a pure peripheral-claiming system, there are a number of smaller steps that courts could take to dethrone the *Markman* hearing from its position of honor in patent litigation. To begin, not every term in a patent claim needs to be construed or fought over. We might reasonably limit claim construction to the explanation of technical terms that a jury is not likely to understand, restoring the original purpose of claim construction. We might also limit claim construction to the point of novelty of the invention, to prevent drafting ambiguities on collateral issues from rendering a patent worthless. Second, we could pay more attention to the patentee's actual description of the invention and less to the words of the claims themselves in deciding the patent's importance and coverage, thus avoiding abuse of the litigation process by patentees who invent one thing and later claim to own something else entirely. Third, we could reinvigorate the doctrine of pioneer patents, restoring some vitality to the doctrine of equivalents—which *Markman* killed[17]—in the subset of cases in which the defendant's product in fact captures the principle of the invention. Finally, we could make peripheral claims

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addition, plant patents employ central claiming. *See* 37 C.F.R. § 1.163(c)(10) (allowing only a single claim on an application for a plant patent).

[16] We borrow this terminology from W. R. CORNISH, INTELLECTUAL PROPERTY: PATENTS, COPYRIGHT, TRADE MARKS AND ALLIED RIGHTS 165 (4th ed. 1999).

[17] *See* John R. Allison & Mark A. Lemley, *The (Unnoticed) Demise of the Doctrine of Equivalents*, 59 STAN. L. REV. 955, 958 (2007) ("The doctrine of equivalents was alive and well before *Markman*, but has been in decline ever since.").

industry-specific, allowing patentees in industries like chemistry who believe they can effectively define a genus to do so, but not limiting patentees in less certain areas to the vagaries of patent-claim language.[18]

We begin in Part I by examining in some detail the sorry state of peripheral claiming, and in particular the failure of patent claims to specify the scope of the rights granted to patentees. The picture we paint will be familiar to anyone who is regularly engaged with the modern U.S. patent system. We then review the features of central claiming in Part II, including the development of claims themselves, tracing the rise and decline of a system that was replaced, ironically, as lacking the certainty that peripheral claiming was thought to provide. In Part III, we discuss the benefits that might be recaptured by a move back toward central claiming as well as the costs of such a move. We also examine several hybrid measures that might be adopted, either in the process of moving from fence-posting to sign-posting or as improvements over the current system that still stop short of fully adopting central claiming.

I. THE BREAKDOWN OF PERIPHERAL CLAIMING

The idea behind peripheral claiming, which U.S. patent law adopted in the 1870s, was to establish the "metes and bounds" of the invention in a manner analogous to real property deeds. But any analogy between patent boundaries and real property boundaries is no more than an analogy, and a flawed analogy at that.[19] Those who are intimate with the patent system have long understood that it is simply impossible to define boundaries of invention with the physical or descriptive precision of defining the boundaries of real property.[20]

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[18] On the many industry-specific differences between these industries, see, for example, DAN L. BURK & MARK A. LEMLEY, THE PATENT CRISIS AND HOW THE COURTS CAN SOLVE IT (2009). While one possibility is to make claiming optional, giving the option to the patentee rather than to, say, the courts, would solve only one side of the problems with claim construction. A patentee who wanted to claim beyond the bounds of the actual invention might choose to rely on peripheral rather than central claiming.

[19] Indeed, any analogy between real and intellectual property is fraught with peril. *See* Lemley, *supra* note 2, at 1036-37.

[20] *See, e.g.*, RIDSDALE ELLIS, PATENT CLAIMS 41 (1949). Henry Smith suggests that the definitional problems "are not fundamentally different from those . . . in property." Henry E. Smith, *Intellectual Property as Property: Delineating Entitlements in Information*, 116 YALE L.J. 1742, 1795-99 (2007). As we delineate in this Section, that argument is simply wrong. *Cf.* Michael A. Carrier, *Why Modularity Does Not (and Should Not) Explain Intellectual Property*, 117 YALE L.J. POCKET PART 95, 97 (2007)

Even the boundaries of real property can shift, as when a boundary river shifts its course. But boundaries based upon language lack the social durability of surveying data or GPS coordinates—the stable, agreed-upon criteria for positioning boundaries in space.[21] This combination—semantic "boundaries" coupled with a metaphor that assumes definition and stability—has led to a situation in which the metaphorical virtues of peripheral claiming obscure the actual damage it is doing to innovation.

A. *The Process of Claim Construction*

The peripheral-claiming system seeks to define the outer boundaries of the invention. In theory, the process works as follows: The applicant and the PTO examiner negotiate over the scope of the invention, limiting it in view of the prior art and the range of examples that the applicant has enabled. The resulting claims define the scope of the patent. Competitors can then read the patent claims and know whether their actions will infringe the patent, and therefore whether they need to avoid the patent or take a license. If they decide to infringe, the patentee sues, and courts determine validity and infringement by comparing those claims to the prior art or the defendant's product, respectively.

Every stage of this theoretical story depends critically on the ability of participants in the process—patentees, examiners, competitors, judges, and juries—to understand what the patent claims cover. Further, at several critical points, the story depends on different parties (applicant and examiner, patentee and competitor) having a *shared* understanding of the meaning of the patent claims. If the applicant and the examiner agree that a patent should issue, but disagree about what the patent actually means, something is wrong. Similarly, if a competitor thinks that a patent means one thing and the patentee thinks it means something different, they are unlikely to be able to conclude a licensing transaction efficiently.

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http://thepocketpart.org/2007/10/10/carrier.html (rejecting Smith's assertion: "boundaries are not as lucid in IP").

[21] Indeed, ironically, while GPS technology may give us clear boundaries in the real world, courts have been unable to agree over the meaning of GPS coordinate systems in patent law. *Compare* Vehicle IP, LLC v. Gen. Motors Corp., No. 2008-1259, slip op. at 3-7 (Fed. Cir. Jan. 6, 2009), *with id.* at 1-2 (Mayer, J., dissenting) (disputing the meaning of the word "coordinates" in a vehicle navigation system).

In fact, disagreements over the meanings of patent claims are pandemic. Lawyers are paid to interpret language—whether in statutes, contracts, or patent claims—in ways that serve their clients' interests. And they are, as a general matter, quite good at it. Before 1995, disputes over what the patent covered were folded into general disputes about patent validity and infringement. Those disputes ultimately went to the jury, which presumably made an implicit determination of claim scope in finding the patent valid or not and infringed or not. Judges periodically determined the meaning of patent claims, usually in the context of bench trials or summary judgment motions requiring resolution of a claim-construction dispute. But claim construction before 1995 was not a separate inquiry in a patent case. It was a part of the overall determination of either validity or infringement.

That changed in 1995 with the Federal Circuit's *Markman* decision, affirmed by the Supreme Court the following year.[22] In *Markman*, the Court held that the construction of patent documents, like the construction of other legal documents, was to be done as a matter of law by judges, not juries.[23] The result was the so-called "*Markman* hearing," a pretrial proceeding in which judges hear argument on the meaning of disputed patent claims, sometimes hear evidence, and issue a written ruling defining the words of the claims in other, theoretically more precise, words. Courts are to construe patent claims based on some combination of their "plain meaning," the description of the invention in the specification, the prosecution history of the patent, technical treatises and dictionaries, expert testimony, and a series of legal canons of claim interpretation.[24] Virtually every judge in the country conducts *Markman* hearings sooner or later in the trial process, though a few judges defer claim construction until shortly before trial when jury instructions are written.[25]

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[22] Markman v. Westview Instruments, Inc., 52 F.3d 967 (Fed. Cir. 1995), *aff'd* 517 U.S. 370 (1996).

[23] *Id.* at 388.

[24] *See, e.g.*, Phillips v. AWH Corp., 415 F.3d 1303, 1313-24 (Fed. Cir. 2005) (en banc); ROBERT P. MERGES ET AL., INTELLECTUAL PROPERTY IN THE NEW TECHNOLOGICAL AGE 263-68 (rev. 4th ed. 2007) (discussing canons of claim construction).

[25] This is common in the District of Delaware, for instance.

B. *Disputes over the Meaning of Patent Claims*

The creation of the *Markman* hearing has made the process of peripheral claiming more transparent. Because judges now hold hearings on claim-construction disputes and have to issue written rulings interpreting disputed claims, the nature and extent of those disputes is now clearer than it was before 1995. And the results are quite alarming. First, there is essentially *always* a dispute over the meaning of the patent claims. Patent suits normally include *Markman* hearings, and every district that has local patent rules provides for them.[26] Indeed, there is rarely just one dispute in a patent claim; patent lawsuits frequently involve fights over ten or more claim terms.[27] The Federal Circuit has held that courts must resolve *every* dispute over the scope of the patent claims as a matter of claim construction, issuing a written ruling that "interprets" even simple patent claim terms that jurors can understand.[28] And district court judges regularly issue orders limiting *Markman* hearings to only ten or so claim terms. Without demanding agreement from the parties, judges might well face arguments over the meaning of *every* word in a patent claim.

These disputes turn out to be surprisingly hard to resolve. Even after a district court issues its claim-construction order, the meaning of the claims is uncertain. The Federal Circuit reverses more than one-third of the claim-construction cases presented to it on appeal, a far larger percentage than its general reversal rate.[29] These reversals aren't just a problem of lack of education; David Schwartz has found that the most experienced district court judges and ITC administrative law judges who specialize in patents have their claim-construction de-

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[26] *See, e.g.*, N.D. CAL. PAT. L.R., *available at* http://www.cand.uscourts.gov/ (follow "Rules" hyperlink on left menu; then follow "Patent Local Rules 3/1/2008" hyperlink).

[27] *See, e.g.*, ChriMar Sys., Inc. v. PowerDsine, Ltd., No. 01-74081, 2008 WL 2966470 (E.D. Mich. July 30, 2008) (construing thirteen terms in one order). To the extent that it is relevant, Professor Lemley serves as the special master in this case.

[28] *See* O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co., 521 F.3d 1351, 1360-62 (Fed. Cir. 2008).

[29] The definitive study is Kimberly A. Moore, *Are District Court Judges Equipped to Resolve Patent Cases?*, 15 HARV. J.L. & TECH. 1, 12 fig.2, 15 tbl.1 (2001); *see also* Christian A. Chu, *Empirical Analysis of the Federal Circuit's Claim Construction Trends*, 16 BERKELEY TECH. L.J. 1075, 1089-90, 1096-1107 (2001) (finding a reversal rate between 29% and 38%, depending on the period examined). More recent work by Judge Moore suggests that the reversal rate is increasing, not decreasing, over time. Kimberly A. Moore, Markman *Eight Years Later: Is Claim Construction More Predictable?*, 9 LEWIS & CLARK L. REV. 231, 246 fig. (2005) (finding a reversal rate of around forty percent); *cf.* Schwartz, *supra* note 10, at 267-68 (finding data consistent with Judge Moore's in a study directed at learning effects among district judges).

cisions reversed just as often as district judges without patent experience.[30] And despite agreement by the Federal Circuit in *Phillips* on the criteria for interpreting patent claims, Federal Circuit judges cannot agree on how to apply those criteria: the rate of dissents in claim-construction appeals tripled after *Phillips* was decided,[31] and the overall reversal rate remained high.[32] In short, claim-construction disputes aren't just make-work; they seem harder for courts to resolve consistently than other types of patent disputes.

Why are there so many disputes over the meaning of patent-claim terms? One possibility is that patents cover new scientific terminology that doesn't have a fixed meaning in the art, so that scientists in the field can reasonably disagree over the meaning of those terms. No doubt this does happen from time to time. But it is by no means a full or even primary explanation for claim-construction disputes. At least four more structural problems make certainty in patent boundary-drawing unlikely.

First, lawyers are paid to create, identify, and exploit ambiguities in language.[33] And lawyers are good at their jobs. The problem begins with the patent applicant. Many claim-construction disputes are over the meaning of terms that are well understood in the art, but which are insufficiently specified in the claim itself. Biotechnologists understand what a "monoclonal antibody" is, but, depending on context, the universe of things that they would include in that term may range from the narrow (only IgM mouse-derived antibodies, say) to the broad (any antibody, including chimeric and humanized antibod-

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[30] *See* David L. Schwartz, *Courting Specialization: An Empirical Study of Claim Construction Comparing Patent Litigation Before Federal District Courts and the International Trade Commission*, 50 WM. & MARY L. REV. (forthcoming 2009) (manuscript at 30, on file with authors) (suggesting that the reason experienced judges can't get claim construction right may be "that claim construction is indeterminate"); Schwartz, *supra* note 10, at 267-68.

[31] R. Polk Wagner & Lee Petherbridge, *Did* Phillips *Change Anything? Empirical Analysis of the Federal Circuit's Claim Construction Jurisprudence* 24 (Mar. 30, 2008); *see also* R. Polk Wagner & Lee Petherbridge, *Is the Federal Circuit Succeeding? An Empirical Assessment of Judicial Performance*, 152 U. PA. L. REV. 1105, 1111-13 (2004) (suggesting that agreement on the interpretive tools of claim construction masks methodological differences in the act of interpretation).

[32] *See* Michael Saunders, *A Survey of Post-*Phillips *Claim Construction Cases*, 22 BERKELEY TECH. L.J. 215, 236 (2007) (finding a claim-construction reversal rate of 39.5% after *Phillips*). Notably, Saunders's study excludes Rule 36 affirmances, and so should bias the reversal rate upwards.

[33] *Cf.* Brenner v. Manson, 383 U.S. 519, 534 (1966) (noting the "highly developed" art of writing patents that actually disclose very little).

ies).[34] The applicant has the power to define the patent claims, but many applicants don't specify what they mean by ambiguous technical language, either because they don't think about the issue or because they intend to exploit the ambiguity in obtaining or enforcing the patent.

Even if the patentee is not being deliberately ambiguous, a dozen years of *Markman* hearings have made it clear beyond doubt that litigators can and will find ambiguity in claim language. Some arguments over the meaning of claims may be frivolous, but it is surprising how many disputes present legitimate questions of context. This is true not only of technical terms—what does "monoclonal antibody" cover—but simple terms as well. Everyone knows what the word "a" means—but does it mean "one and only one," or "one or more?"[35] Depending on the context, either is plausible. And Federal Circuit decisions have given the same term different meanings in different cases. Similarly, *A* "or" *B* can mean either "any of *A*, *B*, *A* + *B*" or[36] "any of *A*, *B*, but not *A* + *B*."[37] Lawyers regularly fight over the meaning of many terms in each patent claim, and those fights are often surprisingly hard to resolve merely on the "plain meaning" of the language. Language, it turns out, doesn't have "a" plain meaning—unless of course, "a" means "one or more."[38]

The problem is sometimes complicated by the very legal rules that courts have created to help us resolve those ambiguities. Some of those rules—such as the rule that courts can look to the specification to understand the meaning of claim terms but not to read in additional limitations[39]—make sense as a matter of theory. In practice, however, the line is difficult to draw, and the fact that courts draw it leads lawyers to interpret terms creatively in order to warrant resorting to the specification. Similarly, the doctrine of claim differentiation, which provides that different claims should be interpreted to cover different things, makes sense in theory. In practice, however, lawyers

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[34] *See, e.g.*, Chiron Corp. v. Genentech, Inc., 363 F.3d 1247, 1257-58 (Fed. Cir. 2004) (discussing the scope of possible definitions for "monoclonal antibodies").

[35] Compare the meaning of "a" in the expressions "I want a job" and "I want a birthday present."

[36] Forgive the expression.

[37] Compare the meaning of "or" in the expressions "I will vote for Obama or McCain" and "it will rain or snow today."

[38] *See*, RICHARD A. POSNER, THE PROBLEMS OF JURISPRUDENCE 296 (1990) ("[M]eaning does not reside simply in the words of a text, for the words are always pointing to something outside.").

[39] *See, e.g.*, Voda v. Cordis Corp., 536 F.3d 1311, 1320 (Fed. Cir. 2008).

who are aware of the doctrine sometimes pick different words that mean the same thing, relying on the doctrine of claim differentiation to force courts to give those terms different meanings.[40]

The legal rule that most complicates the process is the Federal Circuit's recent decision that every dispute over patent scope must be resolved as a matter of claim construction. In *O2 Micro*, the Federal Circuit confronted a simple English word with an established meaning, but the parties disagreed as to whether it applied to the defendant's product. The court held that whenever there is a dispute over what a claim covers, the ambiguity must be resolved as a matter of claim construction because it represents an uncertainty in the meaning of patent claims.[41] After *O2 Micro*, courts have no power to limit the scope of claim construction by passing the dispute to the jury, no matter how unambiguous the language of the claim might seem.[42]

The problem is more structural than just the ability of lawyers to exploit the ambiguity of language, however. A second fundamental problem with certainty in claim construction is the ambiguity of audience. Put briefly, the issue is this: are patent claims to be interpreted as they would be understood by the patentee or by the person having ordinary skill in the art (PHOSITA)? Patent law points in inconsistent directions on this question. On the one hand, much of patent doctrine is directed to determining what the PHOSITA would understand—about the claimed invention, about the prior art, about the teachings of the specification.[43] In claim construction, the focus on "plain meaning" and the occasional resort to dictionaries or treatises[44]

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[40] *See* Mark A. Lemley, *The Limits of Claim Differentiation*, 22 BERKELEY TECH. L.J. 1389, 1394-95 (2007).

[41] O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co., 521 F.3d 1351, 1360-62 (Fed. Cir. 2008).

[42] *But cf.* IP Cleaning S.p.A. v. Annovi Reverberi, S.p.A., No. 08-0147, slip op. at 2-3 (W.D. Wis. Dec. 3, 2008) (requiring evidence that the claim dispute is relevant to validity or infringement, in order to avoid issuing an advisory opinion).

[43] *See, e.g.*, KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 399 (2007) (emphasizing the abilities of the PHOSITA in obviousness); Atlas Powder Co. v. E.I. du Pont De Nemours & Co., 750 F.2d 1569, 1576 (Fed. Cir. 1984) (noting the importance of the PHOSITA in enablement); *see also* Dan L. Burk & Mark A. Lemley, *Is Patent Law Technology-Specific?*, 17 BERKELEY TECH. L.J. 1155, 1185-96 (2002) (discussing the role that the PHOSITA plays in various patent doctrines).

[44] *See* Tex. Digital Sys., Inc. v. Telegenix, Inc., 308 F.3d 1193, 1202 (Fed. Cir. 2002) ("[D]ictionaries, encyclopedias and treatises are particularly useful resources to assist the court in [claim construction]."). *Texas Digital* was substantially limited in this respect by *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). The use of dictionaries or other "plain meaning" raises significant problems of hermeneutics;

suggest that it is the reader whose understanding of the claim matters. On the other hand, various aspects of claim construction, such as the rule that the patentee is free to define her own claim terms,[45] the focus on examples disclosed and particularly on the language chosen in the specification,[46] and the occasional reliance on prosecution history as evidence of the meaning of patent claims,[47] seem to suggest that the goal of claim construction is to discern what the patentee intended the invention to cover. And some claim-construction rules do not focus on either the inventor or the PHOSITA, but rather ask what *a patent lawyer* would understand the claims to mean. How else to understand, for instance, the distinction that the courts draw between "comprising" and "consisting of"?[48] The fiction that claim construction is a question of legal interpretation for judges, not an exercise in understanding technology that depends on the facts,[49] is part and par-

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there is no guarantee that the dictionary or common definition of a term necessarily reflects the intent of the inventor, let alone what the inventor conceived.

[45] *See, e.g.*, Johnson Worldwide Assocs., Inc. v. Zebco Corp., 175 F.3d 985, 990 (Fed. Cir. 1999).

[46] *See, e.g.*, *Phillips*, 415 F.3d at 1313. Indeed, patentees who cite only a single example or examples that all fit into one category in a specification may find that their claims are limited to that category. *See, e.g.*, Warner-Lambert Co. v. Teva Pharms. USA, Inc., 418 F.3d 1326, 1336-38 (Fed. Cir. 2005).

[47] *See Phillips*, 415 F.3d at 1317; Astrazeneca AB, Inc. v. Mutual Pharm. Co., 384 F.3d 1333, 1341-42 (Fed. Cir. 2004).

[48] "Comprising" means that the patented invention contains at least the elements listed, but may also contain others; "consisting of" means that the invention contains only those elements listed. *See, e.g.*, KCJ Corp. v. Kinetic Concepts, Inc., 223 F.3d 1351, 1356 (Fed. Cir. 2000).

There are other examples of claim construction based on a lawyer's understanding. For instance, the Federal Circuit's definition of "a" owes more to the rule of patent law that a claim that uses the term "comprising" is open (and so is infringed by any product that includes the patented elements even if it also includes other things not listed in the patent) than it does to any PHOSITA's understanding of the term "a" in context. *See id.*; Elkay Mfg. Co. v. Ebco Mfg. Co., 192 F.3d 973, 977 (Fed. Cir. 1999) ("[O]ur cases emphasize that 'a' or 'an' can mean 'one' or 'more than one,' depending on the context in which the article is used."). Judicial interpretation of weasel-word claim terms such as "about" also seem to owe more to a legal interest in defining claim scope than the way in which any particular PHOSITA would understand those words. *See, e.g.*, Merck & Co. v. Teva Pharms. USA, Inc., 395 F.3d 1364, 1369-72 (Fed. Cir. 2005) (holding that the term "about" should "be given its ordinary meaning of 'approximately'"); BJ Servs. Co. v. Halliburton Energy Servs., Inc., 338 F.3d 1368, 1373 (Fed. Cir. 2003) (agreeing that a jury should be instructed to give "about" its plain and ordinary meaning).

[49] *See* Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1454-56 (Fed. Cir. 1998) (en banc) (holding that claim construction is an issue of law for judges to decide). For strident criticism of that rule, see *Phillips*, 415 F.3d at 1330-35 (Mayer, J., dissenting), which notes that "[w]hile this court may persist in the delusion that claim construction

cel of the problem. The courts have not grappled adequately with the question of who is to understand the claim terms. It should not be surprising that we will have difficulty in defining terms clearly if we don't know whose understanding of the claims matters, particularly since the person doing the defining is neither inventor nor PHOSITA nor even patent lawyer.

Third, even if we know the audience for claim terms, we have no coherent standards for deciding into what chunks claim language should be broken. To infringe, a defendant's product must include each and every "element" of the patented claim.[50] As we have explained elsewhere, the scope of a patent will often depend on whether an "element" is a single word in the claim, a phrase in the claim, or a fifty-word chunk of the claim:

> Determining the meaning of patent claims necessarily requires a judge to break the text of a claim into discrete "elements" or units of text corresponding to the elements or units that comprise the claimed invention, essentially organizing the language of the claims into "chunks" or "quanta" of text. Define an element narrowly—limit it to a single word, say—and you will tend to narrow the resulting patent. By contrast, defining an element broadly tends to broaden the patent.
>
> For each discrete packet identified, the courts must determine the meaning of the constituent words. They can assign those words definitions that range from narrow, specific meanings to broad, general meanings. In determining the meaning of terms within a particular element, judges practicing patent claim interpretation are engaged in an exercise that to some degree resembles the famous "levels of abstraction test" articulated by Judge Learned Hand for analysis of infringement under copyright law's "idea/expression" doctrine.
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> There are no hard and fast standards in the law by which to make the "right" decision as to either the size of the textual element or the level of abstraction at which it will be evaluated. Indeed, the indeterminacy is so acute that courts generally don't even acknowledge that they are engaging in either inquiry. They define an element almost arbitrarily, and even when judges disagree as to the proper definition they offer no principled basis for doing so.[51]

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is a purely legal determination, unaffected by underlying facts, it is plainly not the case." That issue may still be revisited by the Federal Circuit en banc. *See* Amgen Inc. v. Hoechst Marion Roussel, Inc., 469 F.3d 1039, 1044-45 (Fed. Cir. 2006) (Rader, J., dissenting from denial of petition for rehearing en banc).

[50] *See, e.g.*, Jansen v. Rexall Sundown, Inc., 342 F.3d 1329, 1332 (Fed. Cir. 2003).

[51] Dan L. Burk & Mark A. Lemley, *Quantum Patent Mechanics*, 9 LEWIS & CLARK L. REV. 29, 29-30 (2005) (italics omitted).

Fourth, even if we could overcome all of these problems, any effort to define a claim term necessarily requires that we fix the meaning of that term in time. Words change in meaning, sometimes slowly as language evolves, but sometimes with surprising rapidity.[52] (If you don't believe us, ping someone from two decades ago and ask them to Google the question of language evolution and forward the results to you.) Change in the meaning of language is particularly likely in the case of innovation, since the terms in question are often new and the concepts they represent are not yet fully understood. In *Chiron Corp. v. Genentech, Inc.*, for instance, the court faced the issue of whether "monoclonal antibody" should be given its 1984 meaning or its very different 1999 meaning.[53] And, in *SuperGuide Corp. v. DirecTV Enterprises, Inc.*, the court had to decide whether the claim phrase "regularly received television signal," written in 1985, covered digital television signals that did not exist at that time but were common by the time of infringement.[54]

The problem is that patent law asks different questions as of different times. It tests novelty and nonobviousness at the time that the invention was made, enablement and written description as of the filing date, the meaning of means-plus-function patent claims as of the date the patent issues, and infringement as of the date of infringement.[55] The knowledge of those of skill in the art evolves between those dates, which can be separated by decades. That means that, strictly speaking, patent law shouldn't be giving claim terms *one* meaning, but different meanings for different purposes. This is an issue that has been almost entirely ignored in claim construction.[56] It further undermines the idea that a "fence post" system of peripheral claiming can create certainty by defining the scope of the invention in a static way. It can't, at least not without modifying many of the fundamental precepts of patent law.[57]

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[52] *See, e.g.*, Bridge Proprietors v. Hoboken Co., 68 U.S. (1 Wall.) 116, 147-48 (1863) (resolving a dispute over whether the term "bridge" as used in a 1790 statute encompassed railroad bridges not contemplated at the time of enactment).

[53] 363 F.3d 1247, 1257 (Fed. Cir. 2004). For detailed discussion of this issue, see Mark A. Lemley, *The Changing Meaning of Patent Claim Terms*, 104 MICH. L. REV. 105, 117 (2005).

[54] 358 F.3d 870, 896 (Fed. Cir. 2004)*; see also In re* Hogan, 559 F.2d 595, 605-06 (C.C.P.A. 1977).

[55] *See* Lemley, *supra* note 53, at 105-10 (citing cases).

[56] *See id.* at 116.

[57] In an article on this issue, one of us took the position that peripheral-claim construction required collapsing these date dichotomies. *Id.* at 117-25. While that is true,

Fifth, a significant puzzle of modern claim construction is the asymmetrical treatment of patent claims and prior art references. Patent courts have developed elaborate rules for construing patent claims, including a variety of canons of construction and hierarchies for reliance upon supporting documents such as prosecution histories and dictionaries.[58] But patent law includes no such rules for interpreting the prior art against which claims are measured, despite the fact that references surely do not interpret themselves and must be parsed under some set of expectations, even if those expectations go unarticulated.[59]

In some instances, there may be no explicit interpretive schema for prior art references because the references are not documents. We have observed elsewhere that patent infringement analysis requires the interpreter to map textual claims onto objects or processes in the real world.[60] The Federal Circuit has spoken of literal infringement occurring when the accused device reads "word-for-word" on the patent claim,[61] but the *words* are all on one side of that comparison; there are no words in the accused device to map onto the words of the claim. Certainly physical objects and processes must be "interpreted" at some level; the mind has some neurological and intellectual heuristic for perceiving objects in a meaningful way and comparing those perceptions to the claim text. But law remains a largely textual enterprise, and there are (as yet) no explicit legal canons for constructing the meanings of objects.[62] Those interpretive processes remain implicit and opaque.

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the fact that peripheral claiming requires that modification, and the fact that courts have not yet grappled with that issue demonstrates some of the uncertainty inherent in peripheral claiming.

[58] *See supra* Section I.B.

[59] It is true that we care about prior-art references for different reasons than we care about patent claims. We read a prior-art reference for everything that it teaches, while we limit patent claims to what the inventor actually possessed at the time of invention. But the fact that we should construe prior-art references differently than we do claims for some purposes doesn't explain why we don't seem to construe them at all.

[60] *See* Burk & Lemley, *supra* note 51, at 36. This naturally also occurs in some other areas of law, such as determining whether a contractual provision is satisfied by the goods delivered. *See* Frigaliment Importing Co. v. B.N.S. Int'l Sales Corp., 190 F. Supp. 116, 118-21 (S.D.N.Y. 1960) (parsing the meaning of the word "chicken").

[61] *See, e.g.*, Sri Int'l v. Matsushita Elec. Corp., 775 F.2d 1107, 1118 (Fed. Cir. 1985).

[62] *See* Ronald K.L. Collins & David M. Skover, *Paratexts*, 44 STAN. L. REV. 509, 533 (1992) ("The format of the printed text enframes the process of creating and identifying the legal reality . . . .").

At the same time, not all claim construction occurs in the context of infringement. Claims are also construed in the context of invalidity, against the prior art. Some prior art references do constitute actual devices or practices, such as anticipatory prior art known or used in the United States before the date of invention.[63] But most references will be textual, and even those that are not textual must typically be reduced to a text before they can be evaluated by a court.[64] For that matter, even infringement analysis can require evaluation of textual prior art—for example, to determine whether a range of equivalents is precluded by the prior art or by foreseeable technologies.[65]

Thus, patent law frequently requires the mapping of text onto text, construing claims against the prior art references. Courts ask whether every element in a patent claim is found in an anticipatory reference but have no explicit method for determining how to parse the prior-art text to determine the presence of the invention's elements. Indeed, under the statutory-bar provisions of section 102(b), the standard is one of substantial similarity—a classic statement of central-claiming analysis.[66] Where obviousness is concerned, courts measure the claimed invention against the knowledge of the person having ordinary skill in the art—the PHOSITA.[67] The PHOSITA is in some sense a composite of relevant prior-art references as of the date of invention. But again, there are no explicit interpretive rules to determine how such prior art is to be read, either individually or in the aggregate. The result is that while we construe patent claims, theoretically providing certainty in meaning, we proceed to undermine that certainty in the subset of cases that involve comparing those claims not to devices but to other, unconstrued documents.

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[63] 35 U.S.C. § 102(a) (2006).

[64] *See* Dan L. Burk, *The Role of Patent Law in Knowledge Codification*, 23 BERKELEY TECH. L.J. 1009, 1031 (2008).

[65] *See, e.g.*, Wilson Sporting Goods Co. v. David Geoffrey & Assocs., 904 F.2d 677, 683-85 (Fed. Cir. 1990), *overruled in part on other grounds by* Cardinal Chem. Co. v. Morton Int'l, Inc., 508 U.S. 83 (1993).

[66] *See, e.g.*, Dix-Seal Corp. v. New Haven Trap Rock Co., 236 F. Supp. 914, 919 (D. Conn. 1964); *see also In re* Foster, 343 F.2d 980, 988 (C.C.P.A. 1965) (holding that there need not be precise identity between the claimed invention and 102(b) prior-art reference). To be sure, this seems to be an effort to ensure that section 102(b) prior art fits within the obviousness framework despite the literal language of section 103, which refers to obviousness "at the time the invention was made," not after that time. 35 U.S.C. § 103(a).

[67] *See* KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398 (2007).

Finally, and perhaps most fundamentally, is the problem of what we might call metaconstruction. Peripheral claiming presumes that the claims set out boundaries. The process of claim construction itself presumes that the words of the claims are insufficiently precise to delineate those boundaries. The solution that claim construction offers is to substitute theoretically clearer words for the unclear words of the patent claim. But what happens when—as seems inevitable—the parties dispute the meaning of those new words? We should be skeptical that the substitution of litigation-driven claim constructions for equally well-understood terms that were not written with particular litigation in mind will advance the understanding or clarity of patent scope. It may end up resolving particular cases—indeed, it normally will, at least if the lawyers advocating those claim constructions are good at their jobs—but there is no reason to think these other words will be less ambiguous or more likely to help a jury.

How great these problems are depends, to a large extent, on the industry in which the patent exists. A patent claim that covers a DNA sequence—a list of As, Ts, Cs, and Gs—is perfectly clear to a biotechnologist. Similarly, a chemical formula is perfectly clear to a chemist.[68] By contrast, we have a much harder time defining machines in words, and a still harder time writing words that clearly delineate the scope of software inventions.[69] Not surprisingly, therefore, disputed claim constructions are more likely in the latter sorts of industries. Similarly, David Schwartz has found significant differences in the claim-construction reversal rates in different industries,[70] suggesting that resolution of those disputes is also harder in some industries than it is in others. Our point is not that no one can ever understand patent claims. Rather, it is that, in the industries that account for the overwhelming majority of patents,[71] figuring out the boundaries of a peripheral claim is difficult, if not impossible. And it is certainly not something on which the relevant audiences—patentees, examiners, competitors, and judges—can often agree.

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[68] An exception involves "weasel words"—terms like "about" or "substantially" that vary the scope of a genus.

[69] This is just one of the many industry-specific characteristics of the patent system. For a broader discussion, see BURK & LEMLEY, *supra* note 18.

[70] Schwartz, *supra* note 10, at 260-61.

[71] In this decade, organic chemistry and biotechnology patents account for only four percent of applications filed. Mark A. Lemley & Bhaven Sampat, Essay, *Is the Patent Office a Rubber Stamp?*, 58 EMORY L.J. 181, 195 tbl.7 (2008).

The problem is compounded by a drift in the use of patent claim construction. Before *Markman*, even in what was nominally a peripheral claiming system, the focus was on arguing infringement and validity to the jury. Claim construction occurred, if at all, primarily in the context of explaining the meaning of patent terms to the jury. As a result, it was more likely to be focused on how the PHOSITA would understand technical terms, not on legal argument over the impact of nontechnical terms.[72] Once *Markman* removed the process from the jury,[73] and particularly once the Federal Circuit made it clear that all disputes over patent scope must be resolved in the claim-construction process,[74] that focus was lost. The result was to expand the domain of the uncertainties that we have discussed in this Section, worsening the perils of claim construction by adding to their reach.

C. *The Costs of Claim Construction*

If our only point were that claim construction is difficult, and that courts are unlikely to get it right in all cases, the reader might fairly respond that life (and litigation) is uncertain, and that the inability to make decisions perfectly is no reason not to make them at all. Law relies on language, and interpreting language—the language of contracts, the language of statutes, the language of constitutions—is what courts do. Why would we expect the interpretation of patent claims to be any different?

But the interpretation of patent claims, we think, *is* different: first, because of the custom of peripheral claiming; second, because of the procedural and substantive peculiarity of the *Markman* hearing; and third, because of the relationship between the process of claim construction and the particular goals of the patent system. Construing claims is not like interpreting a contract or a statute: the focus on claim construction that peripheral claiming, and *Markman* in particular, brings to the interpretive exercise imposes significant and peculiar costs on patentees, defendants, and innovation as a whole.

First, and most obviously, the claim-construction process raises the cost of litigation. *Markman* hearings themselves are expensive, requir-

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[72] According to a February 12, 2009, Westlaw search, the Federal Circuit has referred to "claim construction" 1407 times in its twenty-seven-year history. Of those references, 141 occurred before 1995 and 1266 occurred in 1995 or later.

[73] *See* Markman v. Westview Instruments, Inc., 517 U.S. 370, 372 (1996).

[74] *See* O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co., 521 F.3d 1351, 1360-62 (Fed. Cir. 2008).

ing legal briefing, argument, and often witnesses and discovery. But their litigation costs are not just direct. Parties often wait until after a *Markman* ruling to settle a case because they don't have a clear sense of the scope of their patent until the district court defines the patent claims. As a result, districts that do not hold *Markman* hearings, or that issue their rulings very late in the process, tend to have more patent trials and later settlements.[75] And the prospect of appellate reversal may keep the parties litigating even after the *Markman* ruling.

The litigation cost associated with claim construction is the least significant problem that *Markman* causes. Far more significant is that legal interpretation of words has taken the place of a definition of the proper scope of the invention itself. *Markman* sidetracks us into battles over the meaning of words that were used in the first instance to try to define the invention, and then (in metaconstruction) into battles over the meaning of other words defining the words that were supposed to define the invention in the first place. It should be no surprise that the result of this collateral process bears only a coincidental relationship to the ideal scope of the patent claim. After *Markman*, we're not often litigating what the inventor did or what her patent should cover, because we are too concerned with what the lawyers did to define what the invention should cover. We have, in other words, taken our eyes off of the ball.

The shift in focus from the invention to the claim language allows both sides to game the process. It permits—and indeed even encourages—overclaiming by patentees, particularly patentees drafting or interpreting claims years after the invention itself. If the focus is on the language of my claims, not the product that I actually built or described, I can interpret that language creatively to claim, in retrospect, to own inventions that I didn't have in mind when I wrote the patent claims. In case after case, patentees claim to have invented electronic commerce, or multimedia, or video-on-demand, voice-over-Internet, or call centers, or any of a hundred other successful technologies. If the patent lawsuit were focused on the central features of what the patentee invented, overclaiming wouldn't work. But if the focus is on the words of the patent claims, then patent drafters can deliberately introduce ambiguity and patent litigators can exploit both deliberate and accidental ambiguities. Overclaiming may or may not help the

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[75] *See* Mark A. Lemley & Josh Walker, Does *Markman* Drive Settlements? Trial Rates in Patent Cases Across Districts (vaporware 2009).

patentee; the risk is that a claim that is too broad will be held invalid.[76] But the threat that the patent will be broadly construed will often be enough to prompt a settlement.

The inherent ambiguity of claim construction does not always benefit patentees. Individual ambiguities can just as easily be interpreted against the patentee as for her. In fact, the collective effect of claim construction may systematically work to disadvantage patentees. A clever defendant will interpret individual claim terms in ways that render the claim either invalid or not infringed. If a defendant makes ten such claim-construction arguments, the patentee may have to win every one in order for the claim to survive. So the more terms a court construes, the more bites at the apple defendants get.[77] And because claim drafting is, as we have seen, inherently imprecise, any one mistake can be fatal.

The doctrine of equivalents exists to correct just this sort of error in claim drafting, permitting the patentee to expand the scope of her claim to cover a defendant's product that differs from the patented invention in only a minor respect.[78] But that leads us to a final problem with peripheral claiming: it has effectively spelled the end of the doctrine of equivalents. The operation of the doctrine of equivalents is effectively a form of central claiming; taking the literal claim construction as the central invention, the doctrine then asks whether the accused device appropriates the "gist" of the literal claims by adopting a substitution known in the art, or uses an alternative element that accomplishes the same function in the same way to achieve the same result. But it is harder to apply this doctrine to a nominally peripheral claim because we are no longer focused on the heart of the invention. Courts are aware that the text of the claims is supposed to represent the outermost boundaries of the inventor's rights, and they are anxious not to expand the claims through the doctrine of equivalents. This tension between peripheral claiming and the doctrine of equivalents leads, first, to impossible, almost mystical, judicial pronounce-

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[76] In *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 908 (Fed. Cir. 2004), for instance, the Federal Circuit accepted the patentee's claim-construction argument that its claims were not limited to the invention disclosed in the specification. But on remand, the district court held the broadened claims invalid, No. 98-0858 2005 WL 2840744 (S.D. Ohio Oct. 28, 2005), and the Federal Circuit affirmed, finding that the claims were not enabled when construed that broadly. Liebel-Flarsheim Co. v. Medrad, Inc., 481 F.3d 1371, 1380 (Fed. Cir. 2007).

[77] To be fair, the patentee has multiple bites at the apple too, since she files multiple claims in each patent and often obtains a family of patents.

[78] *See* Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605, 609 (1950).

ments about the doctrine of equivalents. For example, the Federal Circuit has held that the doctrine of equivalents does not expand the scope of the claims, only the inventor's right to exclude, and gives the inventor no more than she would have had under a properly drafted literal claim.[79] Second, this tension leads to expansion of the patent claims under the rubric of literal interpretation; rather than finding infringement by equivalents, interpretive sleight of hand is used to stretch the claims text to cover similar accused devices.

As a result, peripheral claiming has eroded the doctrine of equivalents to the point where it is no longer a significant part of patent law. John Allison and Mark Lemley found that patent plaintiffs almost never win doctrine of equivalents cases after *Markman*.[80] They trace the death of the doctrine to *Markman* itself, because district courts that construe claims and then decide literal infringement on summary judgment are unwilling to undo the work of claim construction by allowing the patentee to argue the doctrine of equivalents.[81] The result is that *Markman* has not only set traps for patentees with ambiguous claims, but it has effectively eliminated the best way of avoiding those traps.

Peripheral claiming has created another, less appreciated, problem on the validity side. It is axiomatic that to be valid, a patent must "enable"—teach one of skill in the art to make and use—the "full scope" of the claimed invention.[82] But as Jeff Lefstin has pointed out, it is effectively impossible to enable the full scope of a peripheral claim, because in a peripheral claiming system even the simplest claim contains infinite possible embodiments, only some of which can be conceived, much less taught.[83] For a long while, patent courts ignored this paradox, sometimes by assuming that in a predictable art the

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[79] *See* Wilson Sporting Goods Co. v. David Geoffrey & Assocs., 904 F.2d 677, 684 (Fed. Cir. 1990) ("To say that the doctrine of equivalents extends or enlarges the claims is a contradiction in terms. The claims . . . remain the same and application of the doctrine expands the right to exclude to 'equivalents' of what is claimed." (italics omitted)), *overruled in part on other grounds by* Cardinal Chem. Co. v. Morton Int'l, Inc., 508 U.S. 83 (1993).

[80] Allison & Lemley, *supra* note 17, at 966-67 ("[P]atentees won only 24% of the doctrine of equivalents cases decided [from 1999 to 2007].").

[81] *See id.* at 978 (finding that patentees won 40% of doctrine-of-equivalents cases prior to *Markman*)

[82] *See, e.g.*, Bernard Chao, *Rethinking Enablement in the Predictable Arts: Fully Scoping the New Rule*, 2009 STAN. TECH. L. REV. 3, *available at* http://stlr.stanford.edu/pdf/chao-rethinking-enablement.pdf.

[83] Jeffrey A. Lefstin, *The Formal Structure of Patent Law and the Limits of Enablement*, 23 BERKELEY TECH. L.J. 1141 (2009).

PHOSITA could figure out what all the embodiments were,[84] and sometimes by circularity of reasoning: a patentee only need enable embodiments understood at the time of invention.[85] More recently, however, the Federal Circuit has been taking seriously the idea that a peripheral claim must actually enable everything within the periphery.[86] And since, as Lefstin has observed, that is effectively impossible, the result is a parade of nonobvious inventions whose patents are nonetheless invalidated on enablement grounds.

In short, the effect of peripheral claiming is not to provide certainty over the meaning of patent claims but to replace debates over the proper scope of a legal right with debates over the meaning of terms that often bear only a tenuous relationship to the invention that is the basis of that right.[87] The focus on the meaning of individual words in patent claims drafted by patent lawyers has displaced a focus on what the patentee actually invented and how significant that invention is. The result is that, in modern patent litigation, patent scope—the key policy lever courts can use to ensure that patents encourage innovation—depends not on what the patentee invented but on what terms the patent prosecutor chose to use and how clever patent litigators are in twisting the meaning of those terms. That is not a recipe for socially optimizing patent scope. And the cost of getting the scope decision wrong is high—invalidation of a patent deemed overbroad, or holdup caused by patents that are too broad.

II. CENTRAL CLAIMING

We have described a set of factors, endemic to the peripheral claiming system, that converge to produce perverse results; the patents construed in *Markman* hearings are defined in ways that are both over- and underinclusive. Patent claims can be written or interpreted to cover things far removed from what the patentee actually built or

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[84] Spectra-Physics, Inc. v. Coherent, Inc., 827 F.2d 1524, 1529 (Fed. Cir. 1987); Atlas Powder Co. v. E.I. DuPont de Nemours & Co., 750 F.2d 1569, 1576 (Fed. Cir. 1984).

[85] *In re* Hogan, 559 F.2d 595, 605-06 (C.C.P.A. 1977).

[86] *See, e.g.*, Sitrick v. Dreamworks, LLC, 516 F.3d 993 (Fed. Cir. 2008); Automotive Techs. Int'l v. BMW of N. Am., Inc., 501 F.3d 1274 (Fed. Cir. 2007); Liebel-Flarsheim Co. v. Medrad, Inc., 481 F.3d 1371 (Fed. Cir. 2007).

[87] *Cf.* Autogiro Co. of Am. v. United States, 384 F.2d 391, 397 (Ct. Cl. 1967) ("An invention exists most importantly as a tangible structure or a series of drawings. A verbal portrayal is usually an afterthought written to satisfy the requirements of patent law. This conversion of machine to words allows for unintended idea gaps which cannot be satisfactorily filled.").

designed, and much abuse of the patent system results from this sort of opportunistic overclaiming. At the same time, the fact that patents are defined by their claims gives defendants an opportunity to seize on a drafting ambiguity in order to escape infringement in cases where the defendant's actions should be well within the scope of the patentee's invention. And the fact that claim construction has effectively replaced patent law's doctrine of equivalents[88] means that a single mistake in drafting or interpreting a patent claim can effectively doom a patent.

The dysfunctional state of patent scope is not happenstance, or at least it is not mere happenstance. It is rather the product of judicial and policy decisions that were made as far back as the 1870s, when peripheral claiming, and claims themselves, became ensconced in the U.S. patent system. To fully understand how we have reached the current situation, we must look back at the development of claims and claim interpretation, following history from fence posts back to sign posts. Tracing peripheral claiming to its roots leads very quickly to a consideration of central claiming—the predecessor from which peripheral claiming developed, and which in many countries continued as an alternative to peripheral claiming well into the late twentieth century. In fact, many vestiges of central claiming remain in the modern U.S. patent system, which has never entirely expurgated its central claiming origins. In the end, we will find that the development of peripheral claiming presents a familiar story that illuminates the current difficulties with claim construction and perhaps shows a way out of those difficulties.

A. *From Sign Posts to Fence Posts*

Both claims themselves and the interpretation of claims as peripheral markers to the patent rights developed over time as a matter of custom and common law.[89] As a textual form, separate claims evolved over a period of decades, largely as a matter of informal convention in response to judicial preferences.[90] The earliest versions of the U.S. Patent Act required only that an applicant supply what we would now call a specification to disclose the invention that was the

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[88] Allison & Lemley, *supra* note 17, at 978-79.

[89] *See* William Redin Woodward, *Definiteness and Particularity in Patent Claims*, 46 MICH. L. REV. 755,757-58 (1948).

[90] *Id.* at 758.

subject of the patent.[91] Patents from this period contained no separate statements constituting claims, and courts determined both invalidity and infringement on the basis of the disclosure.

However, in cases involving combinations of old and new elements, some courts viewed the overall description of the invention as an invalid, overreaching attempt to claim those elements already in the prior art. These opinions created an incentive for patent drafters to somehow clarify which aspects of the invention were novel, and so the proper subject of the patent. Consequently, patent drafters began to break out of the text a distinct, separate statement of the novel features of the invention as a one sentence "claim," in order to avoid the possibility that the patent might be viewed as intended to claim everything in the full description of the invention.[92] Alternatively, some patents would contain a distinct, separate statement disclaiming the old, unpatentable features of the invention that might be contained in the full description.[93]

Initially such "claims" were considered useful, and perhaps desirable to clarify the description of the invention, but optional. Patents were held valid with claims and without claims; claims were simply a format available when the inventor felt the need to specially denote particular features of the invention. Neither were the claims read as a separate statement of the invention; they were read as part of the overall description, together with the main body of text and drawings in the patent, to assist in determining what features of the invention were the subject of the patent. Only over a long period of time did the addition of claims to the document move from an optional feature, to an expected feature, to a feature required by convention, and ultimately to a feature mandated in formal Patent Office rules.[94]

The use of claims as a mechanism to define the peripheral boundaries of the patentee's rights was similarly incremental, evolving over a period of decades after claims appeared as a distinct textual component of the patent document. Interpretation of claims as an outer boundary did not begin as a separate doctrine but appears to

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[91] U.S. Patent Act of 1790, ch. 7, § 2, 1 Stat. 109.

[92] *See* Karl B. Lutz, *Evolution of the Claims of U.S. Patents* (pt. 1), 20 J. PAT. OFF. SOC'Y 134, 139-41 (1938) [hereinafter Lutz, *Evolution*].

[93] Presumably, had history proceeded a bit differently, instead of claims we might now have "disclaims" at the end of every patent, *see id.* at 141, as indeed we now do in trademark law.

[94] *See id.* at 142-43 (tracing the development of the Act of 1836); *see also* ELLIS, *supra* note 20, at 2-4 (analyzing the claim requirement).

have been a continuation of "strict construction" approaches to the patent text that predated the appearance of separate claims.[95] Some courts treated the patent, with or without claims, as limited to that which was explicitly described within the four corners of the document. Other courts held that the patent right was not limited to the specific embodiment disclosed in the patent but encompassed other embodiments or "equivalents" of the disclosed invention.[96] As claims began to appear as a separate feature of the patent, they became the focus of this interpretive sparring. As "strict construction" of the claims gained the upper hand in judicial interpretation, literal interpretation of the claims became regarded as the definitive statement of what the patent covered, and inventors naturally responded by drafting claims as broadly as possible, to encompass as much technological space as possible.

The development of peripheral claiming out of judicial strict constructionist approaches was closely related to judicial debates over the claiming of "principles" in patents. Although courts that strictly construed the text of patents limited the coverage of a patent to that explicitly described in the document, courts holding that the embodiments in the disclosure were representative of the invention typically extended coverage of the patent to "substantially similar" embodiments. Substantially similar embodiments were sometimes said to be those encompassing the "same principle" as that disclosed. However, the same courts rejected overly broad applications of this doctrine, prohibiting extensions of a patent to either general "principles" of science or to every possible embodiment of the patented invention's "principle."

The best known examples of this tension appear in the famous cases *O'Reilly v. Morse*[97] and *The Telephone Cases*.[98] In the former, the Supreme Court rejected Samuel Morse's claim to all forms of communication via electromagnetic transmission as an illegitimate attempt to cover all applications of his telegraphic invention;[99] in the latter case, the court approved Bell's claim to all types of telephonic apparatus.[100] To some extent these holdings persist in modern doc-

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[95] *See* Lutz, *Evolution* (pt. 3), *supra* note 92, at 471.

[96] *See* Lutz, *Evolution* (pt. 2), *supra* note 92, at 384 (comparing approaches in Supreme Court cases from the 1853 Term).

[97] 56 U.S. (15 How.) 62 (1854).

[98] 126 U.S. 1 (1888).

[99] *O'Reilly*, 56 U.S. (15 How.) at 119-20.

[100] *The Telephone Cases*, 126 U.S. 1, 534-35.

trines regarding patentable subject matter or commensurability; modern patents cannot extend to laws or phenomena of nature, nor can they claim more than they enable, and the cases are often cited for these propositions. But Bell's claim recited a limitation to apparatus substantially similar to that described in his application, making explicit the doctrinal limitation on his centrally claimed invention, whereas Morse's claim disclaimed any limitation to his disclosed embodiment, making explicit the doctrinal expansion in his central claim.

It is clear that the Patent Act followed, rather than drove, these changing practices of courts and patent drafters.[101] The 1836 Patent Act made no mention of claims, but it required the patentee to "particularly specify and point out" the novel features that constituted the invention—such "pointing" being understood as indicating the central features of the invention.[102] By 1870, claiming had become part of the statutory language—familiar to present practitioners, as it has been retained in the present statute—requiring that the patentee "particularly point out and distinctly claim" the novel features constituting the invention.[103] Patent Office guidelines, too, followed rather than drove claiming practice, reflecting the changes that practitioners made in response to judicial trends.[104]

Claims were initially thought of only as devices for clarifying the grant of a patent for validity purposes, but after some period of time, courts began employing claims in determining infringement as well. The result of this shift, not surprisingly, was for claims drafters to attempt to cover, by explicit claim language, every equivalent that a court might previously have recognized under the doctrine of equivalents.[105] Peripheral construction of claims gave every incentive for inventors, and the attorneys who represented them, to begin claiming out to the very edge of what was patentable.[106] Patent attorneys produced not only more elaborate and convoluted claims attempting to

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[101] *See* ROBERT C. KAHRL, PATENT CLAIM CONSTRUCTION § 2.04[A], at 2-37 (2001).

[102] ELLIS, *supra* note 20, at 4-5.

[103] Patent Act of 1870, ch. 230 § 26, 16 Stat. 198. John Duffy describes the patent office practice before that time in establishing the boundaries of claims. John F. Duffy, *The* Festo *Decision and the Return of the Supreme Court to the Bar of Patents*, 2002 S. CT. REV. 273, 313 n.131.

[104] *See* Woodward, *supra* note 89, at 758; *see also* Lutz, *Evolution* (pt. 3), *supra* note 92, at 464-66.

[105] *See* ELLIS, *supra* note 20, at 253.

[106] *See id.* at 123-24.

anticipate possible equivalents of the disclosed embodiment,[107] but also a greater number of claims per patent. Patentees began to recite multiple claims directed to different variations of the invention that were to be covered by the patent.[108] This proliferation in the number of claims dramatically changed the structure of the patent document and refocused the practice of patent drafting and patent interpretation, leading some experts to observe that the United States patent system had become "claim ridden."[109] Even though the role of peripheral claiming was well established by the end of the nineteenth century, in practice that role was tempered by the way in which patent litigation actually occurred. While patent rights were defined by the claims, the process of claim construction was not itself central to patent litigation. Rather, the parties litigated validity and infringement as largely factual questions, and often considered the language of the patent claims only incidentally, if at all. This was particularly true in the last half of the twentieth century, when most patent cases began being tried to juries. Juries were told to compare the patent claim to the defendant's product, but it seems likely that even if they were not supposed to pay attention to what the patentee actually invented, they often did so. Indeed, the meaning of the claims themselves was sufficiently sub rosa that it was not until 1996 that courts even resolved the question of who was responsible for construing those claims.[110] The significant role that the doctrine of equivalents played during that period also suggests that claims were not the last word in boundary definition.[111]

As a result, it may be fairer to say that during the twentieth century we had not a peripheral-claiming system, but a hybrid peripheral-claiming system. Claims were intended to define the boundaries of the invention, but we treated the effective definition of those boundaries as a fact-specific question for the judge or the jury and rarely opened the implicit boundary definition made in the factfinder's black box. It was only with the *Markman* decision in 1996 that we turned the definition of patent boundaries into a legal decision, made

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[107] KAHRL, *supra* note 101, § 2.04[D], at 2-58.

[108] *Id.* § 2.04[B], at 2-49.

[109] Melville Church, Commentary, *Comments on Recent Articles*, 13 J. PAT. OFF. SOC'Y 459, 459 (1931); *see also* ELLIS, *supra* note 20, at 7 ("As a result, patents had fewer claims before 1870 than they had later.").

[110] *See* Markman v. Westview Instruments, Inc., 517 U.S. 370 (1996).

[111] *See* Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605 (1950) (establishing the propriety of the doctrine of equivalents and explaining how and when it was to be used).

transparently, and thus turned patent scope into an exercise in the interpretation of words.

B. *The Continuing Presence of Central Claiming*

This brief sketch of the history of claiming in U.S. patent practice suggests some reasons that central claiming fell into disuse, and it also suggests how the shift to peripheral claims resulted in a system that today is not simply "claim ridden" but actually claim burdened. It suggests that the ascendance of peripheral claiming was not natural or inevitable, but was highly path dependent. Clearly, central claiming functioned satisfactorily in U.S. patent law for a considerable period of time, during an epoch of robust innovation and technical development. Claiming practice might have evolved otherwise; indeed, as we shall see, it has in fact done so in some situations and jurisdictions.

But if, as we suggest, there is reason to revisit central claiming, we must ask whether the practice was merely a historical curiosity, a lost relic of the nineteenth century, or whether there is evidence that central claiming could function in a modern patent system. In fact, we find that there is considerable evidence to this effect. We draw evidence of central claiming's viability from its continued presence in current patent practice, from its employment in many other forms of IP, and from its use in other industrialized nations' patent systems through much of the twentieth century.

Central claiming is by no means foreign to modern patent practice. Although the interpretive practice for claim interpretation has shifted over time from central to peripheral, elements of central claiming remain to this day within current patent doctrine—sometimes in a guise so familiar that the practice is not recognized as central claiming, and sometimes posing contradictions and anomalies that puzzle and perplex modern scholars and practitioners. For example, U.S. courts under a peripheral-claiming regime continue to follow the rule that claims must be read in light of the patent specification; at the same time, a parallel rule forbids them from importing elements from the specification into the claim.[112] In practice, this set of rules is nearly impossible to follow, since no one can really tell when they have crossed the line from interpreting the claim in light of the specification to reading forbidden elements from the specification

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[112] *See* E.I. du Pont de Nemours & Co. v. Phillips Petrol. Co., 849 F.2d 1430, 1433 (Fed. Cir. 1988) (applying both rules).

into the claim. The first rule is clearly a legacy of central-claiming practice, and the latter rule a canon of peripheral-claiming practice; the fact that they sit uneasily with one another is an artifact of claiming history.

The most prominent legacy from central claiming is likely found in the present-day doctrine of equivalents. In the heyday of central claiming, claims were held to cover the disclosed invention and its equivalents. This language of equivalents continues today in cases that hold that known substitutes for elements of the claimed invention, or those that produce the same result in the same way, are covered by the claims even if the claims do not literally read upon devices incorporating such alternatives. But although the language of "equivalents" is common to both these doctrines, commentators have been quick to point out that similarity in terminology is not necessarily correspondence in concept or effect.[113] Under central claiming, equivalence constituted an expansion of the claims; that is, equivalents considered under central claiming go beyond the language of the claim, whereas equivalents under peripheral claiming must be those encompassed by the claim.[114] To the outside observer, it seems plain that under either system, equivalents go beyond the claim, but the dogma of peripheral claiming demands that the claim remain the outer bound of the patent, even if courts must go beyond their literal meaning to reach a sensible result. In short, modern courts engaged in doctrine of equivalents analysis follow a form of central claiming while denying that they do so.

We are not the first to note that central claiming is no stranger to the current Patent Act, in the doctrine of equivalents and elsewhere; the Supreme Court has similarly observed aspects of central claiming under current practice. In *Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*,[115] addressing the petitioner's arguments that peripheral claiming was inconsistent with the doctrine of equivalents, and that the doctrine was concomitantly inconsistent with the statutory requirement to "distinctly claim" the invention, the Court noted that the doc-

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[113] *See, e.g.*, ELLIS, *supra* note 20, § 10.

[114] Thus, Judge Rich, one of the drafters of the current Patent Act, goes to some pains to insist that the doctrine of equivalents gives the patentee only what she would have been entitled to had the language of her claims been properly precise. *See* Wilson Sporting Goods Co. v. David Geoffrey & Assocs., 904 F.2d 677, 684 (Fed. Cir. 1990) (Rich, J.), *overruled in part on other grounds by* Cardinal Chem. Co. v. Morton Int'l, Inc., 508 U.S. 83 (1993).

[115] 520 U.S. 17 (1997).

trine of equivalents has grown up since the advent of peripheral claiming and reiterated its holding that the doctrine is compatible with current obligations to describe and claim the invention.[116] The Court also noted persistent characteristics of central claiming in other areas of current practice, offering for example that "judicial recognition of so-called 'pioneer' patents suggests that the abandonment of 'central' claiming may be overstated."[117]

The reverse doctrine of equivalents, too, has its origins in the practice of central claiming.[118] Reverse equivalents constitutes an optional component of literal claim analysis, relieving the accused infringer of liability if the accused device, despite falling within the literal scope of the claims, is so far changed in principle that it performs a different function in a different way than the equivalent structure in the patent. The classic statement of reverse equivalents comes from *Westinghouse v. Boyden Power Brake Co.*,[119] a case decided near the end of the central claiming era. *Westinghouse* involved an allegedly infringing locomotive air brake that comprised structures, including a particular valve, that read on the language of the patent in suit.[120] But in considering the accused device, the court determined that the valve performed a different function than the analogous structure in the patented air brake.[121] This finding placed the accused device within the periphery of the claim language, but outside the invention of the patent—the allegedly infringing device was so far changed in principle that it no longer incorporated the gist or character of the patented invention. Hence, no infringement was found even though the claims literally read on the device.

The reverse doctrine of equivalents has not been applied much in recent years, and Federal Circuit judges have sometimes even suggested that the doctrine is dead. But the reports of its death have been exaggerated. The court does still apply the doctrine on occasion.[122]

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[116] *Id.* at 26 n.3 & 27 n.4.

[117] *Id.* at 27 n.4.

[118] *See* Lutz, *Evolution* (pt. 3), *supra* note 92, at 473-74.

[119] 170 U.S. 537 (1898).

[120] *Id.* at 537-38.

[121] *Id.* at 583.

[122] The doctrine is rarely applied, and the Federal Circuit in *Tate Access Floors, Inc. v. Interface Architectural Resources, Inc.*, 279 F.3d 1357, 1368 (Fed. Cir. 2002), suggested that the doctrine had no continued meaning after the passage of the 1952 Patent Act. The court also (misleadingly) suggested that it had never applied the doctrine. *Cf.* Scripps Clinic & Research Found. v. Genentech, Inc., 927 F.2d 1565, 1581 (Fed. Cir.

The legacy of central claiming also lives on in the practice of means-plus-function claiming. Section 112 of the Patent Act expressly permits claiming elements of the invention in terms of a "means" for performing some function; the scope of the claim extends not to all possible means of performing that function, but only to those disclosed in the specification, plus equivalents thereof.[123] This referential structure is precisely the same as that found under the former regime of central claiming; patentees would routinely claim their invention "substantially as described," that is, as disclosed in the specification.[124] And that disclosed embodiment would constitute the exemplar, supplemented by protection afforded to equivalent devices.

Central claiming also continues to function outside of patents as a mainstay of IP analysis. Modern patent practice ostensibly embraces peripheral claiming. But in IP generally, the peripheral claiming scheme of patent law is the odd man out. Other forms of IP tend toward a central claiming approach rather than attempting to linguistically delimit the exclusive rights associated with their subject matter. The patent system's parallel constitutional IP system—copyright—involves no peripheral claims. When determining the extent of the exclusive rights in copyright, courts do not rely on a description of the work, but rather look to the fixed format of the work itself as the starting point for determining the scope of protection. In the paradigm copyright case, where the protected work is a book, play, poem or other text, it is that text that constitutes the "core" or "gist" of the work; indeed, it would seem more than a little odd to copyright lawyers to suggest that copyright holders should draft some "metatext" describing the metes and bounds of the copyrighted text.[125] Copyright cases then ask whether the allegedly infringing text is "substantially similar" to the copyrighted work[126]—akin to comparing the patentee's disclosed invention to the defendant's product.

1991) (applying the reverse doctrine of equivalents). The Federal Circuit has since backed off from this crabbed and ahistorical reading. *See* Amgen, Inc. v. Hoechst Marion Roussel, Inc., 314 F.3d 1313, 1351 (Fed. Cir. 2003) (rejecting the dictum from *Tate Access*).

[123] 35 U.S.C. § 112 (2006).

[124] *See* ELLIS, *supra* note 20, § 24; Lutz, *Evolution* (pt. 3), *supra* note 92, at 470.

[125] But many judicial opinions concerning copyright infringement might be described as such "metatexts," as they typically spend a considerable number of words describing the scope and protected features of the copyrighted text.

[126] *See, e.g.*, Steinberg v. Columbia Pictures Indus., Inc., 663 F. Supp. 706, 711 (S.D.N.Y. 1987).

Similarly, trademark law entails a type of analysis involving the "heart" or "gist" of the exclusive right and leaves determination of its boundaries to courts on a case-by-case basis. Trademark law begins not with a description of the metes and bounds of the trademark right, setting out the fullest extent of protection, but rather with the mark itself—the logo, symbol, sound, or smell that a consumer would associate with the source of goods or services. Under a likelihood-of-confusion standard, the analysis then asks whether an allegedly infringing mark would be considered sufficiently similar to be confusing to an ordinary observer.[127]

A similar pattern holds true in the law of trade secrets. Trade secrets are notoriously difficult to define in judicial pleadings and discovery orders. For strategic reasons, it is in a defendant's interests to attempt definition as early in a suit as possible, but in a plaintiff's interests to delay definition until as late in a suit as possible.[128] Many jurisdictions require a plaintiff to "identify the trade secret with reasonable particularity"[129] before discovery in an enforcement action can proceed. As in central claiming, the burden is on the owner of the trade secret to describe what she considers her confidential business information, rather than to describe the boundary that defines misappropriation.[130]

One might reasonably object that copyright and trade secret law are different because both require proof of copying and therefore proof of access to, and use of, the plaintiff's work.[131] In that context, the legal definition of the boundaries of the invention might be less important, for we know that the defendant started from the plaintiff's work. As such, the only issue is the strength of the legal right, not the factual definition of what is included.

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[127] *See* 15 U.S.C. § 1114; *see also, e.g.*, Jessica Litman, *Breakfast with Batman: The Public Interest in the Advertising Age*, 108 YALE L.J. 1717 (1999) (discussing the standard set forth in the Lanham Act).

[128] *See* Kevin R. Casey, *Identification of Trade Secrets During Discovery: Timing and Specificity*, 24 AIPLA Q.J. 191, 254 (1996).

[129] *E.g.*, CAL. CIV. PROC. CODE § 2019.210 (West 2007); *see also* AutoMed Techs., Inc. v. Eller, 160 F. Supp. 2d 915, 926 (N.D. Ill. 2001) (applying the requirement that a plaintiff first identify the trade secret with reasonable particularity); Porous Media Corp. v. Midland Brake, Inc., 187 F.R.D. 598, 599-600 (D. Minn. 1999) (same); Engelhard Corp. v. Savin Corp., 505 A.2d 30, 33 (Del. Ch. 1986) (same).

[130] CAL. CIV. PROC. CODE § 2019.210.

[131] *See, e.g.*, Selle v. Gibb, 741 F.2d 896 (7th Cir. 1984) (finding, due in part to the fact that plaintiff's song was not commercially successful, that there was no access and therefore no copying to support an infringement claim); UNIF. TRADE SECRETS ACT § 1, 14 U.L.A. 538 (2006) (amended 1985).

Even if that argument justifies distinguishing copyright and trade secret from peripheral claiming systems, it does not explain trademark law, which has no requirement of copying.[132] Neither does it explain the role of central claiming within the patent system, where utility patents are unique in their reliance on peripheral claiming. Design patents set forth an image of their subject and claim the design as presented; the Federal Circuit recently rejected the idea that the image itself should be subject to a *Markman*-style claim-construction process.[133] Similarly, because of the difficulty of presenting a written description of a distinctive plant, plant patents typically use an image of the foliage or flower covered by the patent; this exemplar of the actual invention is the starting place for determination of validity or infringement, another example of central claiming.[134]

Central claiming also operated as the norm in major industrialized nations well into the late twentieth century. For example, Korea employed central claiming until a statutory change in 1980 instituted peripheral claiming; even then, courts continued to apply central-claiming methods well into the 1990s.[135] Central claiming was also the approach in Germany until accession to the European Patent Convention required harmonization with the peripheral approaches of other EPC member states; at that point, Germany moved to an intermediate position that continues to incorporate many aspects of central claiming.[136] For the last several decades it has sought to integrate the two, using peripheral claiming as a starting point but making liberal use of the doctrine of equivalents and purposive claim interpretation.[137] Nonetheless, the German Federal Supreme Court has reaffirmed the central-claiming-based "substantial difference" test.[138] Thus, Germany has to some extent oscillated between the two approaches to claim

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[132] *But cf.* Barton Beebe, *An Empirical Study of the Multifactor Tests for Trademark Infringement*, 94 CAL. L. REV. 1581, 1626-31 (2006) (finding that intent, one of many factors relevant to a finding of likelihood of confusion, is in fact the most important one).

[133] *See* Egyptian Goddess, Inc. v. Swisa, Inc., 543 F.3d 665 (Fed. Cir. 2008).

[134] 35 U.S.C. § 162 (2006).

[135] *See* C. Leon Kim, *Transition from Central to Peripheral Definition Patent Claim Interpretation System in Korea*, 77 J. PAT. & TRADEMARK OFF. SOC'Y 401, 411 (1995).

[136] *See* WILFRIED STOCKMAIR, THE PROTECTION OF TECHNICAL INNOVATIONS AND DESIGNS IN GERMANY 93 (1994); TAKENAKA, *supra* note 14, at 36-38.

[137] *See* TAKENAKA, *supra* note 14, at 36-38; Allan M. Soobert, *Analyzing Infringement by Equivalents: A Proposal to Focus the Scope of International Patent Protection*, 22 RUTGERS COMPUTER & TECH. L.J. 189, 207-11 (1996).

[138] Bundesgerichtshof [BGH] [Federal Court of Justice] Apr. 29, 1986, 98 Entscheidungen des Bundesgerichtshofes in Zivilsachen [BGHZ] 12 (14) (F.R.G.), *translated and excerpted in* 18 INT'L REV. INDUS. PROP. & COPYRIGHT L. 795, 798 (1987).

construction: German claiming practice began with peripheral claiming in the nineteenth century, then, in counterpoint to the movement of claiming practice in the United States, moved away from peripheral claiming toward central claiming.[139]

Even countries like the United Kingdom, which nominally practice peripheral claiming, rarely do so with the literalism that U.S. practice has adopted. In *Kirin-Amgen, Inc. v. Hoechst Marion Roussel Ltd.*, for example, the British House of Lords rejected the literalism of U.S. peripheral claiming in favor of a more functional definition of the claim driven by what the patentee actually invented.[140]

Finally, it may be that central claiming persisted even in U.S. patent law until the late twentieth century. While we have had claims for over a century, the fact that claim construction was not a separate process until 1995 arguably permitted juries and even judges to effectively focus on what the patentee actually invented, even if the claims pointed in a different direction. Thus, John Golden argues that while we adopted claims in the 1870s, "the true triumph of modern peripheral claiming occurred about one hundred years later, in the last decades of the twentieth century."[141]

C. *Rules and Standards in Claim Construction*

In previous Sections we have reviewed a variety of instances where central claiming operates successfully. This survey also says something about the provenance of central-claiming practices. Though billed as a "peripheral claiming" system, the U.S. system is, at best, a hybrid, where elements of a central-claiming legacy intermingle with the current apparatus of peripheral claiming. Although this is not as explicitly clear in the U.S. system as it is in the German system—in part because the German shift toward peripheral claiming is more recent—familiarity with U.S. patent doctrine reveals a system often at odds

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[139] For a detailed discussion of claim construction in Germany, see TAKENAKA, *supra* note 14, at 26-38.

[140] [2004] UKHL 46 (appeal taken from EWCA (Civ.)) (U.K.).

[141] John M. Golden, *Construing Patent Claims According to Their "Interpretive Community": A Call for an Attorney-Plus-Artisan Perspective*, 21 HARV. J.L. & TECH. 321, 349, 352-55 (2008); *see also* Paul M. Janicke, *Heat of Passion: What Really Happened in* Graver Tank, 24 AIPLA Q.J. 1 (1996) (describing the hybrid system that existed before the 1950 decision in *Graver Tank*).

with itself, attempting to reconcile the elements of central and peripheral claiming.[142]

The differences between central claiming and peripheral claiming bear all the hallmarks of the classic debate over the relative virtues of rules and standards.[143] There is a large literature exploring the characteristics of these two types of legal formulations: on the one hand, bright-line, defined legal "rules" that attempt to precisely delineate legally acceptable behavior; and on the other hand, flexible, more nebulous "standards" that offer guidance rather than precision in articulating expected behavior but allow tailoring to the facts of specific cases. Rules are sometimes described as "crystalline," having clear and explicit definitions; standards are sometimes described as "muddy," having more fuzzy or inchoate parameters.[144]

Both types of imperatives are found in the law, and both have their virtues and vices.[145] The two form something of an inverse, matched pair; the virtues of rules complement the vices of standards, and vice versa. The upside of rules is that they give clear guidance as to expected behavior; the downside is that they do not accommodate

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[142] For example, Jeff Lefstin traces current doctrinal tensions between the written-description requirement and claim definiteness to unresolved incongruities arising in the shift from central to peripheral claiming. Lefstin, *supra* note 83 (manuscript at 88-89). Lefstin has identified a fundamental disjunction in modern patent doctrine that may only be resolvable by a return to central claiming.

[143] Jeanne Fromer has made a similar point. *See* Fromer, *supra* note 15 (manuscript at 28-31).

[144] The body of literature on this topic is extensive. *See, e.g.*, FREDERICK SCHAUER, PLAYING BY THE RULES: A PHILOSOPHICAL EXAMINATION OF RULE-BASED DECISION-MAKING IN LAW AND IN LIFE (1991); Louis Kaplow, *Rules Versus Standards: An Economic Analysis*, 42 DUKE L.J. 557 (1992); Duncan Kennedy, *Form and Substance in Private Law Adjudication*, 89 HARV. L. REV. 1685 (1976); Russell B. Korobkin, *Behavioral Analysis and Legal Form: Rules vs. Standards Revisited*, 79 OR. L. REV. 23 (2000); Eric A. Posner, *Standards, Rules, and Social Norms*, 21 HARV. J.L. & PUB. POL'Y 101 (1997); Pierre Schlag, *Rules and Standards*, 33 UCLA L. REV. 379 (1985); Cass R. Sunstein, *Problems with Rules*, 83 CAL. L. REV. 953 (1995).

For a debate on the merits of rules and standards in patent law, see ROBERT PATRICK MERGES & JOHN FITZGERALD DUFFY, PATENT LAW AND POLICY: CASES AND MATERIALS 805-06 (3d ed. 2002); John R. Thomas, *Formalism at the Federal Circuit*, 52 AM. U. L. REV. 771, 792-96 (2003); R. Polk Wagner, *Reconsidering Estoppel: Patent Administration and the Failure of* Festo, 151 U. PA. L. REV. 159, 234-37 (2002). *See also* Thomas Chen, Note, *Patent Claim Construction: An Appeal for* Chevron *Deference*, 94 VA. L. REV. 1165, 1175 (2008) (noting the need to trade off the "simultaneous challenges of inefficiency, indeterminacy, and information costs").

[145] *See, e.g.*, MindGames, Inc. v. Western Pub. Co., 218 F.3d 652, 657 (7th Cir. 2000) (Posner, J.) ("No sensible person supposes that rules are always superior to standards, or vice versa.").

specific and unforeseen factual circumstances. Standards display the inverse set of benefits and detriments: they are flexible enough to accommodate specific and unforeseen factual circumstances, but they give poor advance guidance as to expected behavior.

Perhaps the most important characteristic of these distinctive classes of imperatives is that rules and standards contemplate decisions made at different times. Under rules, the expected behavior is determined ex ante, whereas standards leave that determination to be made ex post. Thus, the ability or inability to foresee relevant factual scenarios and responses favors either rules or standards. Standards are preferable where the circumstances likely to arise are difficult to determine ahead of time and proper behavior is best defined after an actual situation has occurred. By contrast, rules are preferable where it is feasible to anticipate the likely facts ahead of time and predetermine the applicable behavior.

A rules/standards distinction grounded in foreseeability and temporality carries with it implications for institutional competence. Institutions that are equipped for ex ante investigation and determination are best suited to develop rule-based imperatives. Institutions that are better equipped for ex post factfinding and response should generally be entrusted with standards-based imperatives. As a practical matter, in the American legal system this means that legislatures tend to set rules and courts tend to apply standards, with administrative agencies functioning in both capacities, sometimes setting regulations and sometimes adjudicating cases.

In drawing distinctions between rules and standards, it is critical to realize that these classifications are not pristine—pure rules and pure standards are a rarity, and the classification itself identifies the polar ends of a continuum, with a range of hybrids arrayed between the poles. Nor are these designations static; the character of both rules and standards is generally in flux. As Carol Rose has noted, rules tend to progress toward standards over time, as the rigidity of a rule leads to absurd or unjust results.[146] The explicit imperatives of the rule will be infused by adjudicators or administrators with standard-like flexibility. This softening of the rules' hard edges occurs over time until the rule effectively becomes a standard. The inverse process occurs with standards: to save time and effort, adjudicators who are administering standards will begin to carve out bright-line, explicit, or per se rules for situations that seem clear and foreseeable. As

[146] *See* Rose, *supra* note 12, at 580-90.

these carve-outs accrete over time, the standard may eventually harden into a set of rules. Having reached the opposite end of the continuum from where they began, the transformed rules or standards may then begin the reverse evolution, precessing back toward the pole where they began.

The history we have described, leading to the formulation of peripheral rules in the United States, closely follows the paradigm that Carol Rose and others set out for the precession between rules and standards. Searching for greater certainty, courts and patent attorneys substituted the ostensibly bright lines of peripheral claiming for the flexible standards of central claiming. But the search for such certainty is particularly problematic in the case of patent claims. The idea that patent language could offer public notice comparable to the "metes and bounds" of real property is an appealing, and as we have seen, pervasive trope. As Jeff Lefstin points out, the metes and bounds of a property line define a single physical entity, but the peripherally construed claims of a patent are directed to multiple theoretical entities.[147] Thus metes and bounds are simultaneously both a central and a peripheral claim. In the case of real property, the legal and physical boundaries of real property coincide; so too with the legal description of a chattel, such as an automobile identified by make, model, year, and vehicle identification number (VIN). These descriptions of physical property define a physical limit to which legal rights attach, an actual border within which the owner enjoys the prerogatives of ownership.

That doesn't mean there are never disputes over real property rights—there surely are—but they are almost always disputes over the legal consequences of real property, not over whether a particular piece of land is within the scope of the property at all. This is generally not the case for peripheral patent claims. Certainly some patent claims may be so narrow as to encompass only a single embodiment of the invention, in which case the physical and legal borders of the claims will coincide.[148] But typically, patent claims that are peripher-

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[147] Lefstin, *supra* note 83 (manuscript at 63).

[148] The question of boundary coincidence bears on Fromer's argument that dependent patent claims are central embodiments of broader independent claims. *See* Fromer, *supra* note 15 (manuscript at 16). Certainly because dependent claims are usually narrowed claims, perhaps even reading on a single embodiment of the invention, their legal boundaries may tend to coincide more nearly with the physical boundary of a given embodiment of the invention. But under current practice they are still clearly peripherally construed.

ally construed will define a legal border far beyond the physical parameters of the inventor's actual embodiment: not one automobile, but many, some of which do not exist, never did exist, and quite possibly never will exist. Peripheral claim language seeks to encompass those nonexistent embodiments and so cannot offer even the degree of deterministic certainty that a physical description would give.[149]

Consequently, the quest for definitional certainty falters. As the theory predicts, bright lines are often not all they promise to be; they don't fit many situations in practice and have to be altered, fudged, and even discarded when the fit is poor. Eventually, the alterations, fudging, and discarding become so pronounced that the rules effectively become standards, and they eventually become recognized as such. Germany has seen such a claim-construction cycle, from peripheral claiming to central and back again. It may be that the anomalies in the U.S. system have reached the point that it is time for the wheel to turn again here as well.

We think that the theory also tells us something additional about the failure of peripheral claiming that we described in Part I. Bright-line rules work best where an institution is able to determine the optimal legal imperative ex ante. Standards work best where an institution is able to determine the optimal legal imperative ex post. The patent system entails one of each type of institution: an administrative agency, of the sort that is probably best suited to ex ante rulemaking, and a court system, that is probably best suited to ex post adjudication. Claims are formed in the first institution but interpreted in the second. And the selection of a bright-line peripheral-claiming approach for judicial claim-construction confounds this allocation of authority.

It is virtually impossible for any institution to make sensible predictions about a particular patentable innovation: about the applications that will emerge for the patentee's invention, the variations of the invention that might develop, the competing or substitute technologies that will arise, or the dependence or independence of complementary technologies to the given invention. Institutionally, the Patent Office, with a corps of technical experts, is well positioned to tell us whether the invention is novel, innovative and significant, or, more often, to tell us whether it was so at the time of invention or application filing date. But the PTO is composed of technical experts, not legal experts or economists, and certainly not crystal-ball gazers. The PTO cannot tell what the proper scope of the patent will be going

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[149] *See* Lefstin, *supra* note 83.

into the future, particularly given the paucity of resources available for examination and the limited time spent with any given application. It is not at all clear that it would make any difference if additional resources were made available. As one of us has argued elsewhere, given the negligible social value of most patents, it is inconceivable that we would want to invest the resources necessary to fully vet every patent application for validity,[150] much less the resources that would be required to accurately predict all the ways that the market might use or modify an invention. And using the PTO to determine patent scope is particularly problematic given that patent examiners have no experience evaluating infringement as opposed to patent validity. Rather, the innovations that are worth fighting for sort themselves out over time and are vetted by the institution best able to make an ex post determination regarding patent value and scope: the courts.

Determinations of patent infringement and validity are placed in the hands of courts, which are largely retrospective institutions, incrementally calibrating the proper legal imperative case by case, ex post. We have argued elsewhere that this is not a mistake—that courts are best equipped as custodians of patent doctrine.[151] But peripheral claiming stands this custody on its head, purporting to set forth the maximal boundary of the patent grant during the application process, before the measure of the inventor's contribution or the different variants that competitors might adopt can be properly assessed. Of course, some infringement cases will prove to be blatant, free-riding misappropriation of the inventor's contributions, but many other alleged infringements will prove to be more nuanced.[152] Some will even be blatant, expansionist market-grabbing by the inventor.

It is not surprising, therefore, that looking at patent claims ex post, courts are often forced to devise some "breathing room" at the edges of the claims to secure sensible results. With the doctrine of equivalents no longer of much significance, increasingly courts do so

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[150] *See* Mark A. Lemley, Essay, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1497 (2001) ("Because so few patents are ever asserted against a competitor, it is much cheaper for society to make detailed validity determinations in those few cases than to invest in additional resources examining patents that will never be heard from again.").

[151] *See* BURK & LEMLEY, *supra* note 18, at 95 (noting that courts are the right place for conducting a "sensitive policy analysis" for the patent system).

[152] *Cf.* Christopher A. Cotropia & Mark A. Lemley, *Copying in Patent Law*, 87 N.C. L. REV. (forthcoming 2009), *available at* http://ssrn.com/abstract=1270160 (finding that only a tiny percentage of patent cases involve copying as opposed to independent invention by defendants).

by distorting the boundaries of the claims while professing to honor them. In Part I, we showed numerous examples in which the words of claims were stretched to their limit, and beyond.[153] This type of interpretive legerdemain seems to be evidence that courts have been engaged in a sort of central claiming all along. Far from representing the outer perimeter of the patentee's exclusive rights, claim language has come to constitute merely a jumping-off point for judicial exploration of the patent's actual outer boundaries. If courts, as a practical matter, aren't paying peripheral claim construction more than lip service, then perhaps it is time to explicitly reinstate central claiming as the preferred approach.[154]

III. IMPLEMENTING CENTRAL CLAIMING

What we have said so far suggests that much of the trouble in current treatment of claims arises from the unrealistic expectations built into the system of peripheral claiming. While peripheral claiming forces the courts into the protracted and expensive interpretive charade that typifies modern claim construction, central claiming would allow the courts to modulate the scope of patents, as they are best suited to do. But dethroning the centrality of the "fence post" patent claim would require some significant changes to the way the current patent system operates. Peripheral claiming did not emerge in the United States or elsewhere overnight, and it will not disappear overnight either. As we have noted in the recent example of the German patent system, hybrids may emerge in the transition of one approach to the other.[155] Consequently, we consider two things here: the likely effects of a complete shift to central claiming, and certain intermediate measures that might serve as a prelude to full-fledged central claiming, which by themselves might ameliorate many of the problems that we have identified here.

A. *How Central Claiming Might Work in the United States*

To consider the ramifications of a shift to central claiming, we must look systematically at the likely effects on the institutions that

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[153] *See supra* notes 5-9.

[154] Terry Fisher put it this way to us: peripheral claiming is a local maximum. We have spent enormous effort getting to the top of the hill, but we could get much higher if we abandoned this hill, moved across the plain, and climbed a different mountain.

[155] *See supra* notes 136-139 and accompanying text.

mediate the patent system: the Patent Office, the courts, and to some extent the patent bar. We consider first how the patent document might change under central claiming, where such changes might be initiated, and whether a system of central claiming will serve the purposes of patent law.

1. Do We Need Patent Claims at All?

As a practical matter, the shift from peripheral to central claiming could occur in one of two ways. The first would be to jettison claims altogether as a separate feature of the patent document. This would essentially return to the pre-1870 practice of preparing a patent document where the written description of the invention serves to define the basis for the patent right. Claims would of course be available as a drafting strategy if the patentee felt that they would assist her in describing the novel features and principle of the invention. But since they would not define the scope of the invention, there would be less incentive to use them at all, and certainly far less incentive to obsess over them in the way that current claim practice does.

Some might view this approach as the most radical embrace of central claiming, in part because it would be the most apparent: it would alter the format of the patent document. It might also be considered the most radical for a different reason: the Patent Act requires the patentee to "distinctly claim" the invention.[156] As we have discussed above, this phrase has, since its introduction into the statute in 1870, been understood to refer to, and to require, a separate section of the patent document called "claims."[157] Since separate claims had become the practice at the time of the 1870 statute, the statute was understood to recognize and formalize that practice.[158] Absent a statutory amendment to remove the reference to "claims," failure to include discrete claims might be viewed as failing to meet the requirements of the statute.

It is not clear to us that the statute need necessarily be read this way. As discussed above, claims arose in order to identify the novel features of inventions in patent applications.[159] If the statutory language is read as intended to accomplish that goal—to have patentees

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[156] 35 U.S.C. § 112 (2006).

[157] *See supra* note 103 and accompanying text.

[158] Lutz, *Evolution* (pt. 3), *supra* note 92, at 470.

[159] *Cf.* ELLIS, *supra* note 20, at 3; Lutz, *Evolution* (pt. 1), *supra* note 92, at 142; Lutz, *Evolution* (pt. 3), *supra* note 92, at 467.

designate or claim the novel features of their invention—then this function need not necessarily be addressed by a separate section of the document. It can be done in the specification and drawings—the patentee could even use the term "I claim" in some part of the specification, not separately broken out as discrete claims (a practice that was in fact seen in some nineteenth-century patents). The legislative intent could plausibly be seen as requiring some type of "claim," but not the separate claims that were the practice when the "claim" language was added to the statute. This view of the statute might not sit well with some as a matter of legislative intent, but it would not be the first time that a court would have recognized the purpose dictated by a statute as superior to a particular form that seems to be dictated by that statute.

We suspect that many in the patent community would find the second option more palatable: leave claims in place as a separate feature of the patent document but stop reading them as peripheral "boundaries" and start reading them as part of the overall description of the invention as actually conceived and executed by the inventor. This option would essentially return to the late-nineteenth-century practice, around the time of the 1870 statute, of employing and even requiring claims, but treating them as central rather than peripheral.[160] This could avoid any need for a statutory revision; the Patent Act refers to claims but says nothing about how they are to be regarded or interpreted. Of course, there might be some virtue in a legislative imperative to get the courts and the PTO headed in the same direction at the same time. But peripheral claiming—and claims themselves—evolved through judicial practice with legislative recognition following later; we see no reason that a return to central claiming could not happen similarly.

Eliminating the requirement that claims appear as a separate feature of the patent document would have significant advantages. Central claiming will work best if the court's attention is focused on the patentee's invention rather than on the patent lawyer's words attempting to define that invention. In addition, the practice of peripheral claiming may be so ingrained in the patent bar after more than a century of experience that lawyers would be tempted to write claims in peripheral terms, making it harder for judges to apply central claiming to those claims.

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[160] *See supra* notes 94-105 and accompanying text.

While this approach would not require claims, it should not forbid them either, as they might be useful in some cases to describe the invention. We suspect that inventive activity in certain fields might lend itself to the current claim format, even if current experience demonstrates that inventive activity in many fields does not. Additionally, we view the voluntary availability of claims as beneficial in part because voluntary claims might best facilitate the adoption of hybrid or intermediate forms of claiming that we discuss below. In any event, in the sections that follow we explore how a world without claims, or with explicitly central claims, might work.

2. Central Claims in the PTO

We turn next to the impact of central claiming, beginning at the PTO, where things would change substantially, and almost certainly for the better. The PTO today is overwhelmed. Patent pendency is much longer than it has ever been, and the problem is getting worse, not better. The PTO is not even keeping pace with new applications, much less eating into the enormous backlog.[161] Much of the time and cost of the prosecution process—and much of the backlog occasioned by continuation applications—result from drafting, evaluating, and arguing over patent claims. Patent lawyers spend far more time and money drafting patent claims than they do tinkering with the actual disclosure of the patent. While the PTO does not expressly engage in a process of claim construction,[162] it does need to implicitly determine what patent claims mean in order to decide whether they are anticipated by or obvious in view of the prior art.[163] And even when the examiner and the applicant are not arguing over what the patent claims

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[161] *See, e.g.*, Ron D. Katznelson, President, Bi-Level Techs., Presentation at Fenwick & West Lecture Series Inaugural Symposium, UC Davis School of Law: The Perfect Storm of Patent Reform? (Nov. 7, 2008), *available at* http://works.bepress.com/rkatznelson/54.

[162] For suggestions that the PTO should be more involved in claim construction, see, for example, Joseph Scott Miller, *Enhancing Patent Disclosure for Faithful Claim Construction*, 9 LEWIS & CLARK L. REV. 177 (2005); *see also* Chen, *supra* note 144. *But see* William R. Hubbard, *Efficient Definition and Communication of Patent Rights: The Importance of Ex Post Delineation*, 25 SANTA CLARA COMP. & HIGH TECH. L.J. 327 (2009) (arguing that ex ante scope determinations will not work and that we must wait to define patent scope in the context of particular disputes). We are inclined to Hubbard's view on this point.

[163] *See, e.g.*, *In re* Bigio, 381 F.3d 1320, 1324 (Fed. Cir. 2004) (applying the rule that the PTO gives patents their "broadest reasonable interpretation" rather than choosing a specific construction). For a discussion of that rule and its problems, see Michael Risch, *The Failure of Public Notice in Patent Prosecution*, 21 HARV. J.L. & TECH. 179 (2007).

cover, they still spend most of the patent-application process comparing the prior art to the patent claims, arguing about the differences, and most importantly, amending the claims to try to make them patentable.[164] Claim-construction worries, disputes, and amendments are also primarily responsible for the significant growth in the use of patent continuations and requests for continued examination (RCEs), which in turn are responsible for a significant part of the delay in patent prosecution.[165]

Patent prosecution without peripheral claims would look very different. Applicants would still submit, and examiners would still search for, prior art. But they would not have to spend time drafting, arguing about, or amending patent claims. Nor would there be any reason for applicants to file continuations or RCEs, since the patented invention would be the same under central claiming regardless. The combination will lead to lower-cost applications and more efficient (and therefore hopefully quicker) examinations.[166] Examiners who need to spend less time with any given application can process more applications, which will reduce the backlog. Alternatively, they can devote more time to reading and evaluating prior art for any given application, reducing the risk of error. In addition, the elimination of any need for continuation applications will both reduce the backlog problem by ending delay and reduce the number of applications that the office must process.

3. Central Claiming in Litigation

Central claiming would also have significant advantages once a patent issued. The primary advantage of central claiming is that it puts the focus on what the patentee actually invented rather than on what patent lawyers later (often much later) drafted as claims to cover the ground in that invention. By eliminating collateral disputes over

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[164] *See, e.g.*, Lemley, *supra* note 150, at 1499-1500.

[165] On the growth of patent continuations over time, see, for example, Stuart J.H. Graham & David C. Mowery, *Submarines in Software? Continuations in U.S. Software Patenting in the 1980s and 1990s*, 13 ECON. INNOVATION & NEW TECH. 443 (2004); Lemley & Sampat, *supra* note 71. On the role of continuations in causing delay in patent prosecution, see, for example, Mark A. Lemley & Kimberly A. Moore, *Ending Abuse of Patent Continuations*, 84 B.U. L. REV. 63 (2004). One form of continuation—the continuation-in-part (CIP) application—would presumably continue in a central-claiming regime.

[166] *Cf.* Samson Vermont, *Taming the Doctrine of Equivalents in Light of Patent Failure*, 16 J. INTELL. PROP. L. 83, 91 (2008) (noting that the doctrine of equivalents reduces the cost of drafting claims by avoiding the need to anticipate every eventuality).

the meaning of claim language not written by the inventor,[167] and oftentimes not written anytime near the invention date, central claiming can protect both patentees and accused infringers. Patentees are protected from claim-drafting errors that impose unnecessary limits on the scope of their claims, in many cases rendering them effectively worthless.[168] Accused infringers are protected from strategic claim drafting that expands the patent to cover things well beyond the contemplation of the inventor.[169] And courts are given the power to determine the scope of a patent based on the inventive contribution that

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[167] *See, e.g.*, Dana Wang, A Process Model of Creating and Out-Licensing Intellectual Property (2009) (unpublished manuscript, on file with authors) (employing a case study to investigate the various contributors to the creation of a patent beyond the inventor).

[168] A striking example is *Chef America, Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371 (Fed. Cir. 2004), where the Federal Circuit held that a patent claim that mistakenly called for heating dough "to" 400 degrees rather than "at" 400 degrees was infringed only if defendants actually incinerated their bread. While *Chef America* is extreme in its reliance on form over substance in claim construction, there are any number of cases in which words collateral to the main dispute are given meaning that renders the claim ineffective. *See, e.g.*, Larami Corp. v. Amron, 27 U.S.P.Q.2d (BNA) 1280, 1283 (E.D. Pa. 1993) (interpreting "chamber therein for a liquid" in a toy water gun patent in such a way that an external liquid reservoir does not literally infringe the claim, when in fact the main dispute was over the use of air pressure). Claim constructions also often render the invention less valuable than intended by excluding from scope things the patentee clearly intended to include. *See, e.g.*, Unique Concepts, Inc. v. Brown, 939 F.2d 1558, 1562-64 (Fed. Cir. 1991) (construing the term "right angle corner pieces," in a patent for a method of affixing fabric to a wall, as encompassing only preformed corner pieces and not mitered linear pieces); Helmsderfer v. Bobrick Washroom Equip. Inc., No. 08-1027 (Fed. Cir. June 4, 2008) (relying on language "partially hidden from view" to exclude plaintiff's own embodiment from the scope of its patent); Superior Fireplace Co. v. Majestic Prods. Co., 270 F.3d 1358 (Fed. Cir. 2001) (refusing to correct a patent claim for a fireplace that included the phrase "rear walls" rather than "rear wall").

This can't be good public policy. As Chief Justice Marshall put it in one of the earliest Supreme Court patent cases, "If, by an innocent mistake, the [patent] fails in its object, the public ought not to avail itself of this mistake, and to appropriate the discovery without paying." Grant v. Raymond, 31 U.S. (6 Pet.) 218, 244 (1832).

[169] Examples here are legion. Acacia claims to have invented video on demand, *In re* Acacia Media Techs. Corp., No. 05-1114, 2005 U.S. Dist. LEXIS 37009 (N.D. Ca. Jul. 19, 2005), Caritas to have invented VoIP, Caritas Techs., Inc. v. Comcast Corp., No. 05-0339, 2006 U.S. Dist. LEXIS 98006 (E.D. Tex. Oct. 18, 2006), Rembrandt to have invented digital television, Harris Corp. v. Rembrandt Techs., No. 07-0796, 2007 U.S. Dist. LEXIS 69680 (M.D. Fla., Sept. 20, 2007), Freeny to have invented multimedia, Interactive Gift Express, Inc. v. Compuserve, Inc., 256 F.3d 1323 (Fed. Cir. 2001), and BT to have invented global e-commerce, British Telecomm. PLC v. Prodigy Communs. Corp., 189 F. Supp. 2d 101 (2002), all based not on what they actually designed or described in the patent but on the fact that the language of their patent claims can be read in hindsight to cover those later-developed technologies.

the patentee actually made, rather than on the vagaries of claim drafting and the skill of lawyers on both sides at exploiting claim ambiguity.

B. *Considering Objections to Central Claiming*

These advantages do not come without cost, however. At the PTO, the cost is primarily in the assessment of novelty and nonobviousness. An invention is anticipated (i.e., not novel) if each and every element of the invention is present in a single piece of prior art.[170] An invention is obvious if one of ordinary skill in the art would be motivated and able to produce the invention without undue effort.[171] Under peripheral claiming, the PTO compares the prior art to the full range of the claims to the prior art, finding a genus claim anticipated if the prior art overlaps with it even in a small part. Put another way, if a patent claims a group of a thousand different chemicals, evidence that even one of those chemicals was already known will invalidate the patent claim. So too with obviousness.

But the absence of a well-defined boundary creates a problem for this analysis. Suppose the patentee has discovered a new class of chemicals, but in a central claiming system merely discloses the chemicals she has actually used. How is the PTO to know whether the invention is anticipated or rendered obvious by a different chemical in the prior art?[172] We can imagine two different approaches. First,

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[170] 35 U.S.C. § 102 (2006).

[171] *See* KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 399-400.

[172] Central claiming may also have implications for PTO interference practice. Interferences are proceedings conducted by the Patent Office to determine priority of invention when there is more than one claimant to a patent. 35 U.S.C. § 146. Interferences are conducted with reference to a "count"—a manufactured claim constructed for purposes of the interference—against which evidence of priority is assessed. In some cases, the junior party will provoke an interference by copying the claims of the published senior-party patent to ensure complete overlap of the claims. In such cases, the count will be the copied claims because of the complete overlap. But where the claims are not identical, the PTO must construct the count from the coincident portions of the contested claims. This is quintessentially an exercise in peripheral-boundary drawing, as the count represents the overlapping coverage of the competing patent claims, like the overlapping spaces represented by intersecting circles in a Venn diagram.

It is possible that interference practice could eventually be eliminated by a change in American patent law to "first to file" patent granting, but that reform to American law has proved elusive and seems unlikely at any time in the near future. In the interim, a shift back to central claiming might eliminate the relevance of a peripherally constructed count. In the cases where a junior party had copied claims, both parties would necessarily have claimed the "heart" or central principles of the invention. But outside of copied claims, the question to be resolved would be whether the later inven-

the PTO might endeavor to determine how broadly a court might eventually construe the claim to be, and to decide whether a claim of that breadth would be novel and nonobvious. Alternatively, the PTO might substantially narrow its validity analysis, rejecting an application only when the heart of the invention itself tread upon or was obvious in view of the prior art.

Pre-*Markman* PTO practice carried elements of the first approach; while the PTO did not and does not expressly construe patent claims, a longstanding rule required it to give a patent claim the "broadest reasonable construction" in deciding whether the claim ran afoul of the prior art.[173] In effect, this was a form of construing the patent claim against the drafter and therefore of resolving doubts against patentability. Curiously, however, no similar rule gives patents a broad construction during litigation. Indeed, in cases of ambiguity in litigation, courts construe patent claims narrowly rather than broadly.[174]

We are inclined instead toward the second alternative. In a world without a multiplicity of peripheral claims, the right question of patent validity should in fact be whether the patentee has made something new. The fact that the patentee might argue for an overbroad scope for that new invention seems to us a reason to narrow the scope of the patentee's right in litigation, not to deprive her of the right to the invention altogether.

This narrowing still leaves a role for the PTO in policing patent scope under a central-claiming system. The PTO would serve a useful function by identifying the closest relevant prior art even if that art did not invalidate the heart of the patent. That prior art could be used by subsequent courts to cabin the proper scope of the patent.

Under this approach, central claiming would greatly simplify the job of the PTO, but it would do so by giving the office much less opportunity to invalidate patents altogether. That leads us to the second

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tor had first conceived the central characteristics or features of the claimed invention, rather than whether the elements of the count were found in an earlier conception. Shared central features, rather than intersecting peripheral boundaries, would determine whether the same invention had been conceived earlier by one inventor than by another.

[173] *See, e.g.*, *In re* ICON Health & Fitness, Inc., 496 F.3d 1374, 1379 (Fed. Cir. 2007).

[174] *See* Athletic Alternatives, Inc. v. Prince Mfg., Inc., 73 F.3d 1573, 1581 (Fed. Cir. 1996) (holding that, when two constructions are equally likely, courts are to pick the narrower one); *cf. In re* Donaldson Co., 16 F.3d 1189, 1194-95 (Fed. Cir. 1994) (en banc) (holding that the broadest-reasonable-construction rule did not apply to means-plus-function claims).

problem, however. If patents survive PTO scrutiny because the core of the patent is different from what is in the prior art, one foreseeable effect is more patent litigation, with more uncertainty as to the outcome of those suits, since courts will bear a larger burden in defining the scope of the patent right for purposes of both validity and infringement. While we have suggested that this result offers some advantages—it requires courts to focus on validity and infringement together and to engage in a real analysis of the scope of the patent claims on the basis of what the patentee actually invented rather than what the lawyer wrote—there is no doubt that the prospect of not knowing what a patent covers until late in the litigation process will be a frightening one to many.

Those skeptical about central claiming, then, might worry that it will fail to perform the "public notice" functions of patent claims.[175] The ostensible purpose of peripheral claiming includes placing the public on notice as to the limits of the patent, warning the public away from the claimed technology, and demarcating the boundary between infringing and noninfringing activity. Central claiming does not attempt to explicitly demarcate the boundary between infringing and noninfringing activity. Rather, it leaves the determination regarding infringement to adjudication, and so it may offer the public less advance warning about infringement than peripheral claiming seems to offer. And if the practical effect of this uncertainty is opportunistic litigation, either by patent plaintiffs who see an opportunity to reap where they have not sown or by patent defendants who hope to avoid infringement through minor changes, central claiming might be a step backward for patent reform.

The simple answer to those who worry about the failure of public notice under central claiming is that peripheral claiming has already failed in that function, and in fact has failed catastrophically. Recent patent cases are filled with examples of infringers who made reasonable assessments as to what was permissible under a patent's claims and were unpleasantly surprised to discover that sensible readings of the claims gave no notice as to what a court would find to be infringement, much less what a party might claim a patent covers. It seems no exaggeration to say that no one reading the average patent claim can begin to guess what that claim may be held to cover; that can only be known once the claims have been construed by a court in a *Markman* hearing and, realistically, only after the Federal Circuit has

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[175] *See, e.g.*, Fromer, *supra* note 15 (manuscript at 47).

reviewed the findings of the district court judge conducting the *Markman* hearing. The persistent and pervasive character of this failure suggests that it is not an anomaly that can be repaired but a systemic failure in a system that appears to be irretrievably broken. And it is arguably responsible for the fact that in the industries with the most patents, competitors simply don't read those patents.[176]

Additionally, public notice is possible under central claiming, if perhaps by different means than have become accepted under peripheral claiming. We acknowledge that public notice is clearly an important feature of patents, but claims are not the only possible way to provide that notice. During the significant period of history in which patents did not have claims, the notice function was instead fulfilled by meeting the requirement that the patentee specify and point out what he claimed as his invention—a requirement that today would be largely identified with the written-description requirement.[177] And, indeed, the written-description requirement continues to perform this function to some extent under the current regime, even after claims have become a recognized and required part of the patent document.[178] In fact, there are some advantages to obtaining notice from the written description rather than the claims, because the focus will be on the actual invention and disclosure, not on after-the-fact efforts to define what the patentee invented. And because the focus is on that actual invention, central claiming gives its notice much earlier. The public can learn what there is to know about the patented invention when the patent application is filed, not years later when claims are actually approved or still later when continuation applications issue.

Because of the historical development of the statute, layering claims upon written description, the division of "notice" between claims and written description has been rather muddy as a matter of patent doctrine. The two statutory requirements seem somewhat redundant, and this redudancy has led some commentators to question

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[176] *See* Mark A. Lemley, *Ignoring Patents*, 2008 MICH. ST. L. REV. 18, 21 ("[B]oth researchers and companies in component industries simply ignore patents. Virtually everyone does it.").

[177] GEORGE TICKNOR CURTIS, A TREATISE ON THE LAW OF PATENTS FOR USEFUL INVENTIONS IN THE UNITED STATES OF AMERICA §§ 122, 130, 133 (2d ed. 1854).

[178] *E.g.*, Timothy R. Holbrook, *Possession in Patent Law*, 59 SMU L. REV. 123 (2006); Lefstin, *supra* note 83.

how useful the written-description requirement remains.[179] We think the inquiry can be turned around: if the written-description doctrine can provide as much notice as claims do, it is open to question whether we still need claims.[180]

The lesson, then, is that notice does not necessarily require a bright-line rule; in many instances, standards can provide enough notice. Indeed, bright-line rules will usually be contorted into standards in actual practice. We have certainly seen that with patent claims.[181] Not only is the process of claim construction inherently indeterminate, as we have argued in Part I, but even efforts to create absolute rules for particular common terms have failed. We had a "rule" that claims using the phrase "means for doing *x*" were to be interpreted as "means-plus-function" claims governed by special statutory rules of construction,[182] but over time that rule became a standard—a rebuttable presumption that use of particular language does or does not invoke section 112 ¶ 6.[183] And even that rebuttable presumption turns out to be extraordinarily difficult to apply; one strains to find any distinctions at all in reading the Federal Circuit cases that do or do not find a claim to be a means-plus-function claim.[184] We insist on treating the word "comprising" as signifying an open claim and "consisting of" as signifying a closed claim—except when we don't. Courts have refused to apply those terms as patent law defines them when the results

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[179] *See, e.g.*, Mark D. Janis, *On Courts Herding Cats: Contending with the "Written Description" Requirement (and Other Unruly Patent Disclosure Doctrines)*, 2 WASH. U. J.L. & POL'Y 55, 61 (2000); Robert P. Merges, *Software and Patent Scope: A Report From the Middle Innings*, 85 TEX. L. REV. 1627, 1649-52 (2007); Harris A. Pitlick, *The Mutation on the Description Requirement Gene*, 80 J. PAT. & TRADEMARK OFF. SOC'Y 209, 222 (1998).

[180] *Cf.* Sean B. Seymore, *The Enablement Pendulum Swings Back*, 6 NW. J. TECH. & INTELL. PROP. 278, 290 (2008) (arguing that the increased enforcement of disclosure doctrines is effectively driving patentees away from broad peripheral claims).

[181] *See supra* note 12.

[182] 35 U.S.C. § 112 (2006).

[183] York Prods., Inc. v. Cent. Tractor Farm & Family Ctr., 99 F.3d 1568, 1574 (Fed. Cir. 1996). Similarly, claims that don't use the term "means" may nonetheless be means-plus-function claims. *See, e.g.*, Welker Bearing v. PhD, Inc., 550 F.3d 1090, 1096 (Fed. Cir. 2008) (holding that the phrase "mechanism for" presumptively invokes means-plus-function claims).

[184] *Compare* Cole v. Kimberly-Clark Corp., 102 F.3d 524, 531 (Fed. Cir. 1996) (finding that "perforation means . . . for tearing" included structure and so was not a means-plus-function claim (omission in original)), *with* Unidynamics Corp. v. Automatic Prods. Int'l, Ltd., 157 F.3d 1311, 1318-19 (Fed. Cir. 1998) (concluding that "spring means tending to keep the door closed" did not disclose structure and so was subject to 35 U.S.C. § 112, ¶ 6), *abrogated on other grounds by* Egyptian Goddess, Inc. v. Swisa, Inc., 543 F.3d 665 (Fed. Cir. 2008).

seemed absurd.[185] Courts read the term "a" to mean "one or more"—except when they don't.[186] The list goes on.

We are not arguing against judicial interpretation of patent language; as we have pointed out elsewhere, interpretation is a necessary, inevitable, and even useful part of the judicial function.[187] Indeed, we expect some similar disputes over the meaning of the specification, as courts already do in deciding how the specification might influence the meaning of the claims.[188] The problem is, rather, the pretense that the language on which the interpretation is based can or does concretely define the outer boundary of the patent holder's rights. This is essentially an impossibility because patents describe not a physical entity, but a set of legal entitlements.[189] Central claiming avoids the problem, not by offering greater determinacy, but by avoiding the pretense that such determinacy is possible. The processes of granting and enforcing exclusive rights common to all forms of IP require some determination as to the boundaries of the property with which the rights are associated. Some interpretive act by an adjudicator is necessarily part of such determinations, whether they are made as part of a determination of patent scope in central claiming or as part of claim construction in a peripheral-claiming regime. Central claiming sets a muddier standard that courts work out case by case ex post; the virtue is that central claiming admits to being muddy instead of pretending to be crystalline.

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[185] *See, e.g.*, Norian Corp. v. Stryker Corp., 363 F.3d 1321, 1331 (Fed. Cir. 2004) (holding that "consisting of" does not signify a closed claim where a defendant added a spatula to a dental repair kit "consisting of" certain chemicals).

[186] *See, e.g.*, N. Am. Vaccine, Inc. v. Am. Cyanamid Co., 7 F.3d 1571, 1581 (Fed. Cir. 1993) (holding that "linkage to a terminal portion" of a polysaccharide means linkage to one and only one terminal portion); *see also* KCJ Corp. v. Kinetic Concepts, Inc., 223 F.3d 1351, 1356 (Fed. Cir. 2000) (stating that the word "a" generally means "one or more" in open-ended claims). Chisum reports no fewer than seventeen Federal Circuit decisions construing the term "a." DONALD S. CHISUM, PATENT LAW DIGEST §§ 1529–1536 (2007).

[187] *See* BURK & LEMLEY, *supra* note 18, at 104-08.

[188] *Compare* Kinetic Concepts, Inc. v. Blue Sky Med. Group, Inc., 554 F.3d 1010, 1018-19 (Fed. Cir. 2009) (relying on the specification in construing the definition of "wound" narrowly), *with id.* at 1025 (Dyk, J., dissenting) (disputing the meaning of the term "wound" as described in the specification).

[189] As the CCPA noted in reviewing a PTO obviousness determination, "it is most difficult, if not meaningless, to try to say what is or is not an obvious variation of a claim. A claim is a group of words defining only the boundary of the patent monopoly. It may not describe any physical thing and indeed may encompass physical things not yet dreamed of. How can it be obvious or not obvious to modify a legal boundary?" *In re* Vogel, 422 F.2d 438 (C.C.P.A. 1970). *See* Lefstin, *supra* note 83.

The answer to the charge of indeterminacy leveled against central claiming, then, is guilty. But peripheral claiming is guilty of indeterminacy too; indeed, it may be compounding the felony by falsely promising precision that it cannot deliver. The indeterminacy of peripheral claiming is not something that can be fixed; it is inherent in the disjunction between what is to be described and the language that describes it. And if we can't have bright-line rules in this case, we might be better off striving for accurate standards rather than the mirage of unattainable clarity.

C. *Half-Steps: Ending the Hegemony of* Markman

Markman has remarkably quickly become the heart of almost every patent lawsuit. Very few patent cases go to trial: 98% either settle or are decided on summary judgment.[190] And both settlement and summary judgment often depend critically on the outcome of claim construction.[191] Peripheral claiming is even more firmly established; Judge Rich, the author of the 1952 Patent Act, summed up its importance by saying "the name of the game is the claim."[192] Eliminating *Markman* and peripheral claiming would accordingly be a radical change, one that would surely create temporary panic in the patent bar and that might have consequences that are hard to foresee. We are also mindful of the industry-specific character of patent claims, which complicates the comparison of the costs and benefits of peripheral claiming. With that in mind, we offer in this Section some alternatives to a pure central-claiming system that might nonetheless improve on the flawed system of peripheral claims.

First, even if peripheral claims are not required, the law might make them optional. Even before patent claims were required in the nineteenth century, patentees sometimes provided those claims in an

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[190] According to a search conducted February 24, 2009, via Stanford IP Litigation Clearinghouse, http://lexmachina.stanford.edu, 446 of the 24,307 patent cases filed between 2008 and February 2009, or 1.8%, went to jury verdict. This number likely understates the number of cases that went to trial, both because the denominator includes pending cases that might go to trial and because some patent cases, such as pharmaceutical suits against generics, go to bench trial instead. But this number is likely in the right range.

[191] *See, e.g.*, Allison & Lemley, *supra* note 17, at 958 (noting that *Markman* drives summary judgments); Lemley & Walker, *supra* note 75 (investigating the relationship between *Markman* and settlement).

[192] Giles S. Rich, *The Extent of the Protection and Interpretation of Claims—American Perspectives*, 21 INT'L REV. INDUS. PROP. & COPYRIGHT L. 497, 499 (1990).

effort to delineate what they thought they had invented.[193] As we have seen, relying on claim language to define the boundaries of an invention often fails. But as we have written elsewhere, different industries experience the patent system very differently,[194] and there may be industries or technologies for which claims are quite clear expressions of patent scope. A DNA sequence, for instance, tells someone who is skilled in that art what is included and what is not; so too might a definition of a chemical genus.[195] If claims work for those inventions, there is no reason that patentees shouldn't be able to use them. A patentee who set out voluntary claims would, in effect, be precommitting to a certain claimed patent scope, allowing examiners to evaluate the prior art in view of the scope of the claimed patent and giving the public and the courts notice of what the patentee considered her own. But unlike modern mandatory, peripheral claiming, the voluntary claim would not be an all-or-nothing proposition. A patentee who overclaimed could not get broad protection without invalidating the claim but could reasonably fall back on the narrower gist of the invention. Similarly, a patentee who made a mistake in claim language would not be doomed by that mistake in the way it is today.

Second, even in a peripheral-claiming system, courts could pay more attention than they do to the patentee's actual invention and the incremental contribution that it makes compared to the prior art. *Phillips* was a step in the right direction here, emphasizing the patent specification over dictionaries as a source of meaning for ambiguous claim terms.[196] Dictionaries are one further step removed than claim language from the actual invention; looking at what the patentee actually said and did, in understanding patent claims, will help refocus patent analysis on inventions and not linguistic games. But more remains to be done. Courts should think expressly about the importance of an invention in defining its scope, either literally or through the doctrine of equivalents. The now-moribund "pioneering patents"

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[193] *See supra* notes 93-104 and accompanying text.

[194] *Compare* BURK & LEMLEY, *supra* note 18 (manuscript at 142-55), *with* BURK & LEMLEY, *supra* note 18 (manuscript at 156-65).

[195] A particular type of patent claim, called a "Markush" claim, specifies components that can be combined. It takes the form $X + Y + Z$ where X is selected from the group *A*, *B*, *C*; Y is selected from the group *D*, *E*, *F*; and Z is selected from the group *G*, *H*, *I*. *See* ROBERT C. FABER, LANDIS ON MECHANICS OF PATENT CLAIM DRAFTING § 50 (4th ed. 1996). Markush claims uniquely define a group by identifying all its members.

[196] Phillips v. AWH Corp., 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc).

doctrine could serve this purpose.[197] Courts should be willing in appropriate cases to disregard claim language that doesn't seem to accurately capture what the patentee invented, rather than being prisoners to that language even when it subverts the intent of the patent. Even within a peripheral claiming system, the boundaries can be defined with more or less precision, and courts should be willing to look to the purpose of the invention and what distinguishes it from the prior art to avoid giving words a meaning that subverts the true nature of the patentee's invention.

Finally, even if we are to define peripheral claims and construe them in *Markman* hearings, courts need not construe every term in a claim, or even every term about which the parties might disagree. A surprisingly large number of claim-construction disputes turn out to be unnecessary, in the sense that choosing one construction or another will not resolve the case. Other claim constructions are unlikely to help a judge or jury understand the patent claim because they take simple English words and replace them with more simple English

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[197] The Wright brothers, for example, won their patent-infringement suit against Glenn Curtiss in 1914 because they were pioneering inventors, and the court accordingly afforded them broad protection even against the somewhat different Curtiss plane. Wright Co. v. Herring-Curtiss Co., 211 F. 654, 655 (2d Cir. 1914). The Court of Customs and Patent Appeals, the predecessor to the Federal Circuit, applied the pioneer-patent doctrine, *see* Autogiro Co. v. United States, 384 F.2d 391, 400 (C.C.P.A. 1967), and the Supreme Court continues to talk about patent scope under the doctrine of equivalents as a function of how pioneering the patent is. *See* Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 520 U.S. 17, 27 n.4 (1997). To some extent broadened claim scope follows naturally from the situation of a pioneering patent: there is little prior art in a newly opened field that would prevent the inventor from claiming broadly. Broad literal claims may not anticipate later-invented technologies that could be substituted for elements of the claim, however; such substitutions may instead be captured under the doctrine of equivalents, if applied broadly.

The pioneer-patent rule has not been invoked by the Federal Circuit in recent years, leading some to consider it moribund. *Compare* Augustine Med., Inc. v. Gaymar Indus., Inc., 181 F.3d 1291, 1301 (Fed. Cir. 1999) (stating that "pioneering inventions deserve a broader range of equivalents"), *with* Sun Studs, Inc. v. ATA Equip. Leasing, Inc., 872 F.2d 978, 987 (Fed. Cir. 1989) (holding that "the 'pioneer' is not a separate class of invention"), *overruled on other grounds by* A.C. Aukerman Co. v. R.L. Chaides Const. Co., 960 F.2d 1020, 1038 (Fed. Cir. 1992). The Federal Circuit did endorse the pioneering-patent doctrine in an unpublished opinion in 2003. *See* Molten Metal Equip. Innovations, Inc. v. Metaullics Sys. Co., 56 F. App'x 475, 480 (Fed. Cir. 2003). And the doctrine provides at least one factor to consider in deciding how broadly to apply the doctrine of equivalents. Some scholars have argued that it should play a greater role in doctrine-of-equivalents cases than it does today. *See, e.g.*, Michael J. Meurer & Craig Allen Nard, *Invention, Refinement, and Patent Claim Scope: A New Perspective on the Doctrine of Equivalents*, 93 GEO. L.J. 1947, 2002-05 (2005); Thomas, *supra* note 13, at 58-59.

words. Someone may have to decide what "about 6.0" means, but there is little reason to think that defining the term "about" with other words will advance that cause. Further, even some case-dispositive constructions are case-dispositive not because they really resolve a legitimate question about the scope of a patent but because they focus on a drafting error to cabin the patent in ways that the inventor did not intend,[198] or on a deliberate ambiguity to broaden the patent to cover things the patentee did not invent.[199] In those cases, claim construction serves as a trap for the unwary plaintiff or defendant, not as a genuine effort to figure out what the patentee can rightfully claim to have invented.

To solve this problem, we propose that claim construction be limited to terms that are (1) technical, and (2) the point of novelty. The nominal purpose of claim construction is to help the jury understand what the patent covers so that it can evaluate validity and infringement. It makes sense to explain to the jury the meaning of technical terms—no jury can figure out whether the accused product contains "1,2-dichloroethylene" unless they know what that is.[200] It doesn't make sense to explain to the jury what "when" means; claim construction here is being used not to clarify but to shape the meaning of the patent claims and, hence, the scope of the invention. And if we are to do that, we should be doing it only at the point of novelty. It may matter whether the inventor of a piston-pumped water gun claims to own all air-pressure water guns or only those in which pressure is produced by a piston; it should not matter where the water is located in the gun, because that is not relevant to what the patentee actually invented.[201] "Point of novelty" as a concept has a bad reputation in patent law,[202] but that's because the Federal Circuit fears that it will be used to treat inventions as obvious on the basis of prior art that does not in fact

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[198] *See supra* note 168.

[199] *See supra* note 169 (giving examples).

[200] Nasty stuff. *See* U.S. DEP'T OF LABOR, OCCUPATIONAL SAFETY & HEALTH ADMIN., OCCUPATIONAL SAFETY AND HEALTH GUIDELINE FOR 1,2-DICHLOROETHYLENE, http://www.osha.gov/SLTC/healthguidelines/1_2-dichloroethylene/recognition.html (last visited April 15, 2009).

[201] These are, approximately, the facts of *Larami Corp. v. Amron*, 27 U.S.P.Q.2d (BNA) 1280 (E.D. Pa. Mar. 11, 1993).

[202] *See, e.g.*, W.L. Gore & Assocs. v. Garlock, Inc., 721 F.2d 1540, 1548 (Fed. Cir. 1983) (rejecting a gist- or heart-of-the-invention concept in patent law). By contrast, the test was routine in design-patent law until last year. *See, e.g.*, Egyptian Goddess, Inc. v. Swisa, Inc., 543 F.3d 665 (Fed. Cir. 2008) (en banc) (rejecting the test).

suggest the invention to the PHOSITA.[203] Courts should protect patent owners by focusing claim construction on what the patentee did that is new, rather than using the need to describe old elements somehow as a way to trip them up.[204] Claim construction, in short, should be a last resort when the parties cannot agree on what the patentee invented, not routine and central to every piece of every patent case.

CONCLUSION

Patent law is bogged down in the minutiae of claim construction, largely because of the problems attending peripheral claims—that is, claims that purport to set the outermost boundaries of patent rights. Not only is the cost of such boundary setting becoming prohibitive, the goal itself is illusory. Rather than relying on the illusion of peripheral "fence posts," patent law may do better to once again look to stability of central "sign posts." Improvement could be made by adopting hybrid measures, either in the process of moving from fence-posting to sign-posting or as improvements over the current system that still stop short of fully adopting central claiming.

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[203] *See, e.g.*, *W.L. Gore*, 721 F.2d at 1548.

[204] We acknowledge that not every invention will have a "point of novelty" as such; for many inventions, the novel feature is a unique combination of known elements. But the fact that the point of novelty limitation won't always work to cabin unnecessary claim construction doesn't mean it can't be helpful in particular cases.