Establishing Rules for Resolving Markman Failures

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In Markman v Westview Instruments, Inc, the Federal Circuit held that the scope of patent claims was a matter of law entirely within the domain of the courts. The decision also provided the analytical framework for claim construction. While Markman detailed this framework for construing patent claims, later courts were left to determine what default rule should apply when the Markman analysis fails. This Comment specifically addresses an apparent conflict within Federal Circuit case law concerning the best way to construe patents when the Markman analysis fails to do so conclusively.

The Markman framework for analyzing patents mirrors that of statutory interpretation. The framework is multitiered, first separating intrinsic evidence from extrinsic, and then further specifying the use and ordering of intrinsic evidence. In determining the evidence intrinsic to the patent, the court “consider[s] three sources: The claims, the specification, and the prosecution history,” quoting Levy v Gadsby, 7 US 180, 186 (1805). This establishes both the relative importance and order of analysis for the intrinsic evidence. In determining the scope of a patent, the claims are treated similarly to a

2 Markman, 52 F3d at 977–78 (holding that the “construction of a written evidence is exclusively with the court”), quoting Levy v Gadsby, 7 US 180, 186 (1805).
3 See Markman, 52 F3d at 979–81 (explaining that a court should rely on the intrinsic evidence of the claims, the specification, and the prosecution history when construing claims and should only turn to extrinsic evidence to supplement the intrinsic evidence).
4 The Markman court found:

The more appropriate analogy for interpreting patent claims is the statutory interpretation analogy... There can be only one correct interpretation of a statute that applies to all persons. Statutes are written instruments that all persons are presumed to be aware of and are bound to follow.

Id at 987, citing United States v John C. Grimberg Co, 702 F2d 1362, 1365, 1368 (Fed Cir 1983).
6 Markman, 52 F3d at 979. The contents of a patent application must include a specification as prescribed by 35 USC § 111(a)(2) (2000), Section 112 details:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, ... and shall set forth the best mode contemplated by the inventor of carrying out his invention. The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
statute's enacted language, with the specification providing some initial context and the prosecution history aiding claim construction much as legislative history informs statutory interpretation. Next, the court considers the extrinsic evidence, which consists of "all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." Courts interpreting the meaning and scope of patent claims use these sources of intrinsic and then extrinsic evidence combined with relevant canons of construction to construe the claims in dispute. However, due to the nature of litigation, the court's role in determining the scope of a patent is usually limited to selecting between the competing meanings proffered by the opposing parties. To adjudicate the suit, a court need only determine which of the two proffered definitions to accept. The patent holder offers a definition that includes the adverse party's product, and the adverse party offers a definition that excludes her product. Because the result of litigation is either infringement or noninfringement (that is, the result is binary), any additional definition provided by the court is irrelevant as it will either be inclusive or exclusive of the adverse party's product. If a proffered definition fails to satisfy any part of the Markman analysis, it fails as a viable definition, and the other definition must prevail. However, the question remains: how should the Federal Circuit determine the scope of a patent where both proffered definitions satisfy the entire Markman analysis? Either rule forces the court to choose between two competing and equally plausible definitions, thereby creating a windfall for the winning party.

While the Federal Circuit has established rules for resolving Markman failures, it has done so in a confusing, piecemeal fashion. In fact, Federal Circuit case law seems to support both a broad product-inclusive and a narrow product-exclusive rule of construction. In Athletic Alternatives, Inc v Prince Manufacturing, Inc ("AAI"), the court held:

Where there is an equal choice between a broader and a narrower meaning of a claim, and there is an enabling disclosure that

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7 Markman, 52 F3d at 980.
8 See Douglas Y'Barbo, Interpreting Words in a Patent, 1 Chi Kent J Intel Prop 191, 192 (1999) ("The trial court's only task is to answer that binary question; it cannot, regardless of what it does, supplement that result.").
9 See id ("There is no point seeking a finer distinction that the end result permits. Therefore, claim construction should not be an unbounded search for the disputed term's meaning but instead a rational process of selection from between the two proffered alternatives.").
10 See id.
11 See id. Third parties to the action may have a strong interest in alternative claim constructions, but the magnitude of that interest is limited by the doctrine of collateral estoppel.
12 73 F3d 1573 (Fed Cir 1996).
indicates that the applicant is at least entitled to a claim having the narrower meaning, we consider the notice function of the claim to be best served by adopting the narrower meaning.\footnote{13} However, other decisions by the Federal Circuit adopt a product-inclusive rule of construction.\footnote{14} Facing two equally plausible definitions in \textit{Rexnord Corp v Laitram Corp},\footnote{15} the court noted that “we may presume that the examiner gave the terms in the proposed claim their ‘broadest reasonable interpretation consistent with the specification,’ since he was obliged to do so.”\footnote{16} This rule of construction was later adopted by the more often-cited case of \textit{Texas Digital Systems, Inc v Telegenix, Inc}, which stated that “[i]f more than one dictionary definition is consistent with the use of the words in the intrinsic record, the claim terms may be construed to encompass all such consistent meanings.”\footnote{18}

The Federal Circuit has not addressed the conflicting rules of construction established by \textit{Rexnord} and \textit{AAI}. Only one Federal Circuit case cites both \textit{Rexnord} and \textit{AAI}, but the court does not attempt to clarify how the two cases interact.\footnote{19} Additionally, three cases cite both \textit{Texas Digital} and \textit{AAI}, but none of those cite \textit{Texas Digital} and \textit{AAI} for their opposing rules of construction.\footnote{20} As such, the Federal

\begin{footnotesize}
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\item Id at 1581 (emphasis added). See also \textit{Housey Pharmaceuticals, Inc v Astrazeneca UK Ltd}, 366 F3d 1348, 1356 (Fed Cir 2004), cert denied, 125 S Ct 973 (2005) ("In that unusual case [AAI], one patent applicant made two contradictory and irreconcilable affirmative representations of the contested limitation. In those circumstances, we held that the narrower interpretation trumps the broader interpretation.").
\item See, for example, \textit{International Rectifier Corp v IXYS Corp}, 361 F3d 1363, 1374 (Fed Cir 2004) (finding a broad definition of the term “adjoining”). Other district court rulings have also followed the product-inclusive definition. See, for example, \textit{Gleason Works v Oerlikon Geartec AG}, 238 F Supp 2d 504, 509–10 (WD NY 2002).
\item 274 F3d 1336 (Fed Cir 2001).
\item Id at 1347, quoting \textit{Hyatt v Boone}, 146 F3d 1348, 1355 (Fed Cir 1998).
\item 308 F3d 1193 (Fed Cir 2002).
\item Id at 1203, citing \textit{Rexnord}, 274 F3d at 1343.
\item See \textit{Housey}, 366 F3d at 1352, 1356 (citing \textit{Rexnord} for the proposition that the meaning of a claim term must be considered in the context of the specification and prosecution history, and \textit{AAI} for the proposition that the narrower meaning trumps the broader when there are two contradictory and irreconcilable plausible meanings for a claim term).
\item See id at 1352, 1356 (citing \textit{Texas Digital} for the proposition that “[d]ictionaries and treatises may provide insight into a term’s ordinary meaning,” and \textit{AAI} for the proposition that the narrower meaning trumps the broader when there are two contradictory and irreconcilable plausible meanings for a claim term); \textit{Novartis Pharmaceuticals Corp v Abbott Laboratories}, 375 F3d 1328, 1334, 1337–38 (Fed Cir 2004) (citing \textit{Texas Digital} for the presumption that a patent term has the meaning that a person of ordinary skill in the art would ordinarily attribute to it, and \textit{AAI} concerning the doctrine of equivalents); \textit{Liquid Dynamics Corp v Vaughn Co, Inc}, 355 F3d 1361, 1366, 1368 (Fed Cir 2004) (citing \textit{Texas Digital} for the proposition that the written description and the prosecution history cannot be used to reject the plain meaning when it is clear, and \textit{AAI} for a proposition of prosecution history estoppel).
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Circuit has never had occasion to decide whether the two rules are in conflict or, if there is no conflict, to explain the proper nonconflicting application of the two rules.\textsuperscript{21} This Comment reconciles these two inconsistent rules of construction by arguing that each rule applies to a distinguishable set of factual circumstances. By applying the two rules in this fashion, the Federal Circuit can promote the patent system’s goals more effectively than adopting either rule alone. Part I discusses the cases that led to the adoption of each rule and resolves the apparent conflict by presenting the factual circumstances under which each rule should govern. Part II discusses the principle of construction that underpins these two rules and provides the appropriate framework for analyzing the costs and benefits these rules present to the patent system. Finally, Part III demonstrates why this Comment’s resolution of these rules—highlighting their complementary functions—promotes a more effective patent system.

I. FEDERAL CIRCUIT CASE LAW CONCERNING \textit{MARKMAN} FAILURES

A. The Product-Exclusive Rule of Construction

\textit{AAI} concerned a dispute over tennis racket technology.\textsuperscript{22} Originally, the litigants entered into a joint venture to develop a new type of tennis racket that presented splayed strings.\textsuperscript{23} However, when the two companies were unable to reach a licensing agreement, Prince entered the market with an alternative design and Athletic Alternatives asserted infringement.\textsuperscript{24}

At trial, the parties disagreed solely on the issue of claim construction,\textsuperscript{25} specifically, over the definition of the phrase “varies between.”\textsuperscript{26} The Federal Circuit’s opinion provides a clear framework for the disagreement:

\textit{AAI} contends, citing a number of dictionary definitions of “between” in its favor, that “the plain meaning of the words ‘varies between minimums . . . and a maximum’ is that the \textit{distance} of string splay \textit{must change} . . . [but] nothing in Claim 1 prescribes

\textsuperscript{21} See Newell Companies, Inc v Kenney Manufacturing Co, 864 F2d 757, 765 (Fed Cir 1988) (“[P]rior decisions of a panel of the court are binding precedent on subsequent panels unless and until overturned \textit{in banc}.”).
\textsuperscript{22} 73 F3d 1573.
\textsuperscript{23} Id at 1574.
\textsuperscript{24} Id at 1574–75.
\textsuperscript{25} Id at 1578 (“[T]he parties do not dispute any relevant facts regarding the accused product but disagree over which of the two possible meanings of Claim 1 is the proper one.”).
\textsuperscript{26} Id.
(or limits) how much or how many times the distance must change.” Prince, for its part, cites alternative and equally valid dictionary definitions of “between” in an effort to demonstrate that the trial court properly construed the claim to require that the offset distance d, take on at least three values, i.e., a minimum, a maximum, and at least one intermediate value.27

After an exhaustive analysis utilizing the entire gamut of the Markman framework the court concluded, “Neither the claim, the specification, nor the prosecution history establishes the meaning of the phrase ‘varies between’ in Claim 1.”28 The disputed phrase presented “two equally plausible meanings.”29 Faced with these two plausible definitions, the court held against the patent holder and for the adverse party. The AAI court, therefore, established a failure default rule accepting the narrow, product-exclusive definition.30

The Federal Circuit based its holding in AAI on the patent system’s policy of fair notice.31 The court relied upon § 112 of the Patent Act, which requires that “[t]he specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.”32 As the AAI court and other courts have recognized, “[S]ince the requirement that one’s invention be distinctly claimed became part of the patent law in 1870, the primary purpose of the requirement is ‘to guard against unreasonable advantages to the patentee and disadvantages to others arising from uncertainty as to their [respective] rights.’”33 The AAI court’s analysis found a statutory duty to resolve uncertainty in defining patent claims in favor of the narrow meaning; namely if it were to accept “the broader of the two [definitions, the court] would undermine the fair notice function of the requirement that the patentee distinctly claim the subject matter disclosed in the patent from which he can exclude others temporarily.”34 The Federal Circuit seemed to sug-

27 Id at 1579 (internal citations omitted).
28 Id at 1580.
29 Id at 1581.
30 Id.
31 See id (“[W]e consider the notice function of the claim to be best served by adopting the narrower meaning.”). See also Northern Telecom Ltd v Samsung Electronics Co, Ltd, 215 F3d 1281, 1295 (Fed Cir 2000) (“When presented with the situation where two clear yet contradictory definitions are provided by the patentee, we stated that this court would choose the narrower of the two, as such a practice would ‘best serve[]’ the notice function of the claim.”), citing AAI, 73 F3d at 1581.
32 35 USC § 112.
34 AAI, 73 F3d at 1581.
gest that when facing two equally plausible definitions, it must limit the scope of the patent to enforce upon the patent holder the statutory obligation of fair notice.

B. The Product-Inclusive Rule of Construction

*Rexnord Corp v Laitram Corp* concerns a dispute over conveyor technology in the bottling and packaging industry. Specifically, Rexnord Corporation was the holder of U.S. Patent 5,634,550 ("the '550 patent"), which describes a novel manner in which to "transfer articles between an upstream conveyor and a downstream conveyor oriented at ninety-degree angles with respect to each other," so that the last row of cans or bottles can be transferred or cleared automatically without manual intervention. The innovation of the '550 patent was the use of interlinking "chain links" together with "chain pins," where "[t]he 'chain links' have two portions: (1) a 'link module portion' and (2) a 'cantilevered portion.'" Rexnord filed an infringement action against Laitram for its manufacture and sale of the conveyor system named "ONE PIECE Live Transfer Belt," where it was undisputed that the "conveyor belts contain[] chain links having a one-piece construction, that is, the link module portion and the cantilevered portion are of one piece."

The case turned on the construction of the word "portion" as used in the '550 patent, and, as always, the court had to determine the proper definition from the two competing definitions proffered by the litigants. The court stated the issue as follows: "The dispositive question in this case is whether the word 'portion' as used in the claims of the '550 patent should be limited to parts of an object that are 'separate,' as opposed to parts that can be either 'separate' or 'integral.'" After an examination of both the claims and the specification, the court concluded, "When the claim language is assessed on its own, and when the written description is examined carefully, one finds that the patentee has described an invention that embraces, through the word

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35 274 F3d at 1339.
36 Id.
37 Id. The previous solution to the problem was to use a metal transfer plate where each row of cans was pushed off the plate onto the downstream conveyor by the next row of cans. "Hence, when using a transfer plate, the last row of cans or bottles had to be pushed manually onto the downstream conveyor." Id.
38 Id at 1339–40.
39 Id at 1340.
40 See id at 1341 ("Rexnord contends that the broader interpretation should be adopted. Not surprisingly, Laitram argues that the narrower interpretation requiring separate parts should prevail.").
41 Id.
‘portion,’ [a] structure that may be either ‘integral’ or ‘separate.’"  
Moreover, the court found the prosecution history to be “inconclusive regarding the proper interpretation of the word ‘portion,’”  
As with the *AAI* court, the *Rexnord* court found that the *Markman* framework failed to establish a single viable definition.  
Faced with this failure of the *Markman* analysis, the Federal Circuit declared that it must find for Rexnord, creating a different failure default rule whereby the court was “obliged to give ‘portion’ the *broader* interpretation that encompasses both ‘separate’ and ‘integral’ parts of the invention.”  
The basis for the Federal Circuit’s holding in *Rexnord* was the obligations of the patent examiner rather than those of the patent holder, as in *AAI*.  
Simply stated, “we may presume that the examiner gave the terms in the proposed claim their ‘broadest reasonable interpretation consistent with the specification,’ since he was obliged to do so.” The Federal Circuit reasoned that if the patent examiner must afford each claim term the broadest possible meaning prior to the grant, then a court could not erroneously enlarge the scope of the patent during adjudication.  
This suggests that a court must accept the broader of the definitions proffered unless specifically and explicitly disclaimed. The scope of the patent must include all possible defini-

42 Id at 1345. Compare *AAI*, 73 F3d at 1579:  
In sum, the dispositive claim language on its face is susceptible to two equally plausible meanings, under one of which the Vortex racket literally infringes Claim 1, and under the other of which it does not. As a result, the scope of Claim 1 cannot be defined by resort to the ordinary and accustomed meanings of its terms alone, and the specification is completely silent with regard to the meaning of “varies between.”  

43 *Rexnord*, 274 F3d at 1347. Compare *AAI*, 73 F3d at 1580 (“The prosecution in this case is thus unhelpful as an interpretive resource for construing the ‘varies between’ claim limitation.”).  

44 *Rexnord*, 274 F3d at 1345 (“[O]ne finds that the patentee has described an invention that embraces, through the word ‘portion,’ [a] structure that may be either ‘integral’ or ‘separate.’”); *AAI*, 73 F3d at 1581 (“[W]e are left with two equally plausible meanings of Claim 1.”).  

45 *Rexnord*, 274 F3d at 1348 (emphasis added).  
See id at 1347 (“Given the examiner’s obligation to confer the broadest reasonable interpretation . . .”).  

46 Id, quoting *Hyatt v Boone*, 146 F3d 1348, 1355 (Fed Cir 1998). See also *Manual of Patent Examination Procedures* § 2111 (“Applicant always has the opportunity to amend the claims during prosecution and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified.”).  

47 See *In re Yamamoto*, 740 F2d 1569, 1571 (Fed Cir 1984) (stating that requiring the examiner to provide the broadest possible definition prior to the grant “serves the public interest by reducing the possibility that claims, finally allowed, will be given broader scope than is justified”).  

48 See *Rexnord*, 274 F3d at 1348 (“The fact that the patentee did not explicitly disclose a one-piece embodiment in the specification or that the examiner failed to require an illustration of a one-piece construction is not enough to import a ‘separate’ limitation from the specification into the claims.”) (emphasis added).
tions that do not invalidate it because the patent examiner is obligated to give the terms their broadest possible meaning when granting the patent.

Interestingly, this reasoning also invokes fair notice principles. Fair notice is established during the prosecution of the patent when terms are given their broadest meaning. In order to survive the examination process, the applicant must disclaim any meaning that would cause invalidation. Thus, the patent grant would necessarily put all parties on notice since the scope of the patent would encompass any and all meanings that a party might perceive.

C. Contrasting the Product-Inclusive Rule with the Product-Exclusive Rule

The Rexnord court seemed to require a broad interpretive rule that is contrary to the earlier AAI rule of narrow construction. Again, either rule of construction forces the court to decide between two equally plausible definitions, granting a windfall to the winning party. Because neither the Rexnord nor the AAI court provided any substantive or even procedural distinction between these rules, the Federal Circuit has left lower courts without guidance in selecting one rule over the other.

There are several plausible reasons why the Federal Circuit has not attempted to reconcile the two rules. First, Markman rarely fails to provide a prevailing definition. Markman is an intensive analysis, and it is rare that both parties could present opposing definitions satisfying all of the Markman requirements. Second, Rexnord and Texas Digital are often cited for other propositions of law, but rarely cited for their product-inclusive rule of claim construction. In fact, Rexnord is usually cited for its holding concerning the proper use of intrinsic evidence to interpret the patent, and Texas Digital for its holding concerning the use of dictionary definitions as evidence of the ordinary

50 See id at 1347 (“[I]f the examiner wanted to hinge patentability upon the [narrower definition] he would have said so, and required a specific amendment to reflect [that decision].”).
51 See, for example, Housey Pharmaceuticals, Inc v AstraZeneca UK Ltd, 366 F3d 1348, 1356 (Fed Cir 2004) (noting that AAI is an “unusual case”). Interestingly, litigants also find it difficult to understand the rule of construction presented by AAI. See id (“Housey misreads Athletic Alternatives.”); Northern Telecom, 215 F3d at 1295 (“This is a misreading of Athletic Alternatives.”).
52 See note 20.
53 See, for example, Housey, 366 F3d at 1352 (“However, a claim must also be considered in the context of the intrinsic evidence, namely the claims, the specification, and the prosecution history.”), citing Rexnord, 274 F3d at 1342–43.
meaning of claim terms. " Finally, claim construction, from the stand-
point of interpretation, is similar to statutory construction. Karl Lle-
wellyn noted in The Common Law Tradition that almost all canons of
statutory construction have conflicting rules. 4 Thus, it should not be
surprising that the Federal Circuit would also have conflicting rules of
claim construction given the great similarity between the two tasks.

Notwithstanding the lack of attention surrounding this issue, the
interaction of the two rules needs to be analyzed and explained for
several reasons. First, the rules of construction presented by Rexnord
and AAI seem, upon initial inspection, to be in conflict. Second, and
most important, courts do continue to cite them, albeit rarely, for their
opposing rules of construction without reference to the other. For ex-
ample, International Rectifier Corp v IXYS Corp6 and Gleason Works
v Oerlikon Geartec AG7 both quote Texas Digital's product-inclusive
rule of construction, whereas Housey Pharmaceuticals, Inc v Astra-
zeneca UK Ltd8 cites AAI for its product-exclusive rule of construc-
tion. Without adequate guidance from the Federal Circuit, lower
courts may be applying the rules incorrectly—or worse, arbitrarily.

In resolving these conflicting rules of construction, the Federal
Circuit's rules governing conflicting decisions must be considered. In
the Federal Circuit, "prior decisions of a panel of the court are binding
precedent on subsequent panels unless and until overturned in banc.
Where there is direct conflict, the precedential decision is the first."9
In light of such established rules, it is important to try to resolve these
different opinions in a manner that avoids conflict.

D. Resolving the Conflict Between the Product-Inclusive and
Product-Exclusive Rules of Construction

While the AAI and Rexnord rules of construction seem to be in
conflict, more nuanced interpretations of these decisions may demon-

54 See, for example, Home Diagnostics, Inc v LifeScan, Inc, 381 F3d 1352, 1356 (Fed Cir
2004) ("Other useful references for construing disputed terms include dictionary definitions and
treatises.").
1960) (listing the canons of construction in thrust and parry format, demonstrating that almost
all canons of construction are at least facially in conflict with one another).
56 361 F3d 1363, 1374 (Fed Cir 2004) ("It is true that 'if more than one dictionary definition
is consistent with the use of the words in the intrinsic record, the claim terms may be construed
to encompass all such consistent meanings.'").
57 238 F Supp 2d 504, 509 (WD NY 2002), quoting Texas Digital, 308 F3d at 1203.
58 366 F3d 1348, 1356 (Fed Cir 2004) (noting that where two irreconcilable definitions are
proffered and there is "a tie" under the Markman analysis, AAI provides that the narrower
definition should be selected), citing AAI, 73 F3d at 1581.
59 Newell Companies, Inc v Kenney Manufacturing Co, 864 F2d 757, 765 (Fed Cir 1988)
(internal citations omitted).
strate coherence. Given the workings of the Federal Circuit, it is important not only to avoid the conflict but to do so in a manner that most effectively promotes the policy goals of the patent system. Neither AAI nor Rexnord expressly limit their holdings to a particular type of competing definition (overlapping or nonoverlapping), yet their respective holdings might be limited in such a way to minimize conflict. Arguably, AAI may require choosing the narrower of the two plausible definitions only when the definitions overlap. Rexnord, on the other hand, may require accepting both plausible definitions only when the definitions are nonoverlapping. To clarify, if the patent holder proffers a definition of a term that consists of a range from 1 to 10 and the adverse party proffers a range from 1 to 5, AAI would require setting the scope of the patent to a range from 1 to 5 as the two proffered definitions are overlapping. On the other hand, if the patent holder proffers a definition of a term that consists of a range from 1 to 10 and the adverse party proffers a range from 20 to 30, Rexnord would require setting the scope of the patent to include both the range from 1 to 10 and the range from 20 to 30. Under such an interpretive regime, AAI and Rexnord are not in conflict because they apply to two distinguishable sets of circumstances.

Parts II and III of this Comment argue that Rexnord and AAI are not, in fact, in conflict. Rather, when their rules work in tandem, they promote the policies of the patent system more effectively than either rule alone.

II. FAIR NOTICE, THE PATENT OFFICE, AND DRAFTING INCENTIVES

Evaluating each rule of construction requires applying the principle of fair notice to the practical constraints of patent drafting, the interaction between the patent drafter and the patent office, and the tactics of litigation. In the end, pragmatic considerations of fair notice will control the proper application of each rule.

A. Fair Notice

The Federal Circuit has invoked "fair notice" as the analytical mechanism to defend its decisions in both AAI and Rexnord. It is

60 The AAI court discusses an "equal choice between a broader and a narrower meaning of a claim," which can occur only if the definitions overlap. AAI, 73 F.3d at 1581 (emphasis added).
61 The Rexnord court's holding adopting both the separate and integral definition of the claim term exemplifies a term with multiple nonoverlapping definitions, as the meaning of separate is clearly distinct from that of integral. See Rexnord, 274 F.3d at 1347.
62 For AAI, see text accompanying notes 31-34; for Rexnord, see text accompanying notes 48-50.
important to note however, that adopting any rule that (1) includes all possible definitions, (2) limits to the more narrow definition, or (3) excludes nonoverlapping definitions can satisfy the requirements of fair notice, so long as the rule is clear and all parties have knowledge of the rule ex ante. The Federal Circuit could satisfy its statutory obligation of providing fair notice by adopting any of the rules. Fair notice requires clarity but does not necessarily dictate any specific rule. While both the AAI and Rexnord courts used the principle of fair notice as the foundation for their holdings, neither court explored what fair notice requires in practice.

Fair notice is essential to a working patent system because it enables investment in developing both original innovation and work-around technologies. The United States patent system is based on the policy rationale that in order to provide adequate incentives to invent, the innovator must be given an exclusive property right for a "limited time" in exchange for a full disclosure that enhances the public domain. If this picture is accurate, ex ante the government must be able to provide a credible commitment to protect this exclusive property right. As part of this credible commitment, the scope of patent claims must be clearly delineated.


This is what we characterize as our "irrelevance conjecture"—the choice of default becomes irrelevant when it is costless to contract and when the default rule is common knowledge. Without these transaction costs (and when the default rule is common knowledge), strategic bargaining can still cause inefficient contracting, but the same contractual equilibrium will be reached by private parties, regardless of the default rule.

64 See General Electric Co v Wabash Appliance Corp, 304 US 364, 369 (1938) ("The limits of a patent must be known for the protection of the patentee, the encouragement of the inventive genius of others and the assurance that the subject of the patent will be dedicated ultimately to the public."); Gretchen Ann Bender, Uncertainty and Unpredictability in Patent Litigation: The Time Is Ripe for a Consistent Claim Construction Methodology, 8 J Intel Prop L 175, 176 (2001) ("Public policy requires that a patent owner clearly and explicitly notify the public of the scope of the subject invention. The patent document itself should put the world on notice of the patent’s boundaries.").

65 See US Const Art I, § 8, cl 8 ("To promote the Progress of Science and the useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."). See also Mark A. Lemley, The Economics of Improvement in Intellectual Property Law, 75 Tex L Rev 989, 993 (1997) ("Intellectual property is fundamentally about incentives to invent and create. While there are a number of noneconomic theories offered to explain both copyright and patent law, both the United States Constitution and judicial decisions seem to acknowledge the primacy of incentive theory in justifying intellectual property.").


A major concern in the modern patent system is uncertainty surrounding the ultimate coverage of a patent; that is, the relationship between invention, disclosure, and patent scope that is at the core of the social compact of the patent system. Ambiguity in this context
Imperfect demarcation of the scope of patents reduces the effectiveness of the patent system by reducing incentives to invent. Erroneously limiting the scope of a patent during adjudication reduces incentives to invest in developing new technologies.\(^6\) Erroneously enlarging the scope of a patent during adjudication reduces the incentive to invest in work-around technologies.\(^7\) Thus, providing fair notice by accurately delineating the scope of the patent is essential to a working patent system.\(^8\)

B. The Patent Office

A rough review of the capabilities of the United States Patent and Trademark Office ("Patent Office") is necessary to properly select the interpretive rule that most effectively promotes the policies of the patent system. \(\textit{Rexnord}\) defended its rule of construction on the obligations of the patent examiner. Thus, the actual ability of the Patent Office to accurately and thoroughly review patent grants is vitally important when determining which rule of construction best promotes the policies of the patent system.

First, it is important to note who the Patent Office employs as patent examiners. The basic qualification for examiners in any field is simply a four-year science or engineering degree with either a grade point average over a 2.66 out of a possible 4.0 or membership in a rec-

\(^{67}\) See Clarisa Long, \textit{Patent Signals}, 69 U Chi L Rev 625, 633 (2002) (commenting that under the rent-extracting theory of patents, the failure of the law to protect the rent-extracting features of patents would cause a reduction in the number of patents sought).

\(^{68}\) See \textit{Markman}, 517 US at 390 ("Otherwise, a zone of uncertainty which enterprise and experimentation may enter only at the risk of infringement claims would discourage invention only a little less than \textit{unequivocal foreclosure} of the field.") (internal quotation marks and citations omitted) (emphasis added).


Adequate description of the invention guards against the inventor's overreaching by insisting that he recount his invention in such detail that his future claims can be determined to be encompassed within his original creation. The definiteness requirement shapes the future conduct of persons other than the inventor, by insisting that they receive notice of the scope of the patented device.

The importance of demarcating the scope of the patent has long been understood: "As courts have recognized since the requirement that one's invention be distinctly claimed became part of the patent law in 1870, the primary purpose of the requirement is 'to guard against unreasonable advantages to the patentee and disadvantages to others arising from uncertainty as to their [respective] rights.'" \(\textit{AAI}, 73 F3d at 1581,\) quoting \textit{General Electric}, 304 US at 369. Moreover, the likelihood of infringement increases as the uncertainty surrounding the property right increases. See William M. Landes and Richard A. Posner, \textit{The Economic Structure of Intellectual Property Law} 347 (Belknap 2003) ("Other things being equal, the more certain law is, the less likely is litigation.").
ognized honor society. Thus, most examiners will be young, recent graduates of colleges and universities, and not fully experienced professionals.

Second, the examiner has limited time to review any single patent application. A patent examiner will on average spend only eighteen hours, over a two- to three-year period, reviewing a single patent. Moreover, patents have, on average, approximately fifteen claims and cite more than fifteen pieces of prior art. Thus, patent examiners are limited in their ability not only to understand the technology of the patent, but also to review all the language of the claims for vague or ambiguous terms.

Finally, once a patent application has survived the prosecution process, the patent holder receives procedural advantages in later adjudications concerning the patent. Once granted, a patent is presumed valid, and to overcome that presumption, a party must prove the patient's invalidity by "clear and convincing evidence." The deference patents receive in adjudication, combined with the limited ability of the Patent Office to review patents, creates perverse incentives for patent drafters.

C. Patent Drafting Incentives

If the broad interpretive rule suggested by Rexnord is unconditionally accepted, the patent drafter, with knowledge of a broad rule, is encouraged to leave critical terms vague to increase the likelihood


71 Mark A. Lemley, Rational Ignorance at the Patent Office, 95 NW U L Rev 1495, 1500 (2001) (suggesting that many patents issued by the Patent Office would have been rejected if the examiners had spent more time researching and reviewing the applications).

72 See John R. Allison and Mark A. Lemley, Who's Patenting What? An Empirical Exploration of Patent Prosecution, 53 Vand L Rev 2099, 2120 (2000) ("On average, each patent cited 10.34 prior U.S. patents, compared with only 2.44 foreign patents and 2.37 non-patent references. Indeed, the median patent cited no non-patent prior art at all."). "Prior art" is a term of art in patent law, and generally designates what is known in that subject area prior to the inventor's invention. The rules concerning what is valid prior art are described in the Patent Act. 35 USC §§ 102-03 (2000) (defining various categories of inventions as novel and nonobvious). See also Jay P. Kesan, Carrots and Sticks to Create a Better Patent System, 17 Berkeley Tech L J 763, 770-71 (2002) ("This disclosure [of prior art in an application without description of that prior art] is of limited assistance to the Patent Office because the patent examiner has the difficult task of discerning what knowledge is buried in these references in order to appreciate the import of the disclosed prior art.").

73 See Kesan, 17 Berkeley Tech L J at 771-72 (cited in note 72) (noting that prior art disclosures are often inadequate due to private incentives, leaving the Patent Office ill-equipped to determine the proper scope of the patent).


75 Hybritech Inc v Monoclonal Antibodies, Inc, 802 F2d 1367, 1375 (Fed Cir 1986).
that the patent examiner will unknowingly approve those terms. Moreover, the patent drafter is in a better position to know which terms are critical to the scope of the patent than the patent examiner. A rule that adopts the broadest possible interpretation provides the patent drafter with incentives to leave those critical terms vague with an eye toward extending the scope of the patent during later adjudication. While this extended scope may be limited by other doctrines, such as the Markman analysis itself, this Comment specifically addresses cases in which the Markman analysis fails to determine which definition is proper. Thus, relying solely on other doctrines of claim construction to remove the incentive for patent drafters to use strategic ambiguity to expand the scope of their patents ex post likely would fail. A rule that assumes the patent examiner is aware of all the critical terms in the patent and knowingly adopts the broadest interpretation during the examination period creates perverse incentives for patent drafters. Rather than pursuing a course of clarity and good patent drafting, the drafter will pursue a course of vagueness.

76 Patent drafters have incentives to be vague in the hope the Patent Office will “miss something.” Wagner, 151 U Pa L Rev at 215–16 (cited in note 66). The reason to push for broad patent rights is that broad patent rights can create substantial monopoly power and bring capital return in excess of the value of the invention. See Landes and Posner, Economic Structure of Intellectual Property Law at 323 (cited in note 69) (“If [a] broad patent is granted, you may have gotten yourself a very substantial monopoly.”).

77 See Wagner, 151 U Pa L Rev at 213 (cited in note 66) (“Among the ‘parties’ to the patent transaction, the patentee is either the best informed or the one who can most easily and cheaply become the best informed about the context of her innovation.”).

78 See id at 214–15:

Given the asymmetry of information, the incentives for a patentee to fail to produce relevant information are substantial. Even assuming that an invalid patent would either be “costless” because it remained unused, or eventually was struck down by a court, the presumption of validity and the high costs of patent litigation offer strong incentives for the patentee to affirmatively avoid producing information relating to patent scope. See also Landes and Posner, Economic Structure of Intellectual Property Law at 324 (cited in note 69) (“Broad interpretation of a patent’s scope increases the patentee’s power to exclude competition.”).

79 The patent drafter would be able to manipulate the procedural advantages of the patent grant and the limited knowledge of the patent examiner to extract rents in excess of the merits of the invention. See F. Scott Kieff, The Case for Registering Patents and the Law and Economics of Present Patent-Obtaining Rules, 45 BC L Rev 55, 114 (2003) (“[D]efense to the Patent Office’s decisions on validity as being well-informed is questionable because the Patent Office is not the lower cost provider of information relating to validity.”).

80 See Wagner, 151 U Pa L Rev at 215–16 (cited in note 66):

[T]he patentee has both the motive and the opportunity to behave strategically. . . . It might involve declining to conduct a thorough prior art search, thus transferring this cost to the public as well as increasing the possibility that the [Patent Office] will “miss something” and allow the unwarranted scope. Perhaps a patentee will draw inappropriately broad claims, hoping that the prosecution process will only minimally (if at all) pare the claims back, thus
If the Federal Circuit adopts a rule of narrow construction, however, patent drafters have a significant incentive to draft clearly and to "particularly point[] out and distinctly claim[] the subject matter which the applicant regards as his invention." This clarity by the applicant will allow her to gain the broadest possible scope for her claims during drafting, since any ambiguity will be construed against her. Patent drafters have an incentive to "be[come] their own lexicographers" and explicitly define the critical aspects of their invention. These incentives should cause the patent drafter to pursue a course of clarity rather than one of vagueness to gain the greatest statutory monopoly.

Nonetheless, there are limits on patent drafters' ability to be explicit. Language is inherently ambiguous, and therefore increasing the clarity of patent claims will be costly to the patent drafter as it increases the price of creating an effective patent. The patent system should be concerned with the cost of drafting adequate patents because the higher the cost is, the lower the incentive to invent will be.
III. PATENT DRAFTING AND THE MAGNITUDE OF ERROR COSTS

Patent drafting not only affects the quality of the patent itself, but also plays a large role in determining the magnitude of error costs when the scope of the patent is erroneously demarcated. Simply put, different rules of interpretation encourage different patent drafting tactics. Selection of the proper rule of interpretation must be made with regard to drafting tactics, the inherent ambiguity of language, and the factual circumstances of the dispute.88

A. Overlapping Definitions

In the context of overlapping definitions, the AAI court was correct, and the patent system should accept the narrow definition over the broader definition as this rule will produce a more efficient patent system. When the adverse party’s definition is within the scope of the patent holder’s definition—that is, an overlapping definition—the patent holder is in the best position to reduce the harms of imperfect demarcation of patent scope.89 In this context, the inherent problems of language are less compelling. The reduced scope of the patent is not due to the inability of the patent drafter to adequately describe the meaning of the patent, but rather the patent drafter’s lack of explicitness in claiming the broader meaning. The original drafting included the broader interpretation; thus, words must have existed at the time of the drafting to describe the broader invention. Therefore, it is more likely that the reason for the vague language was by choice—that is, the drafter believed that it was not worth the cost to be explicit.

The patent drafter is in a better position than the patent examiner to define the patent’s proper scope since the patent drafter has greater awareness of the critical terms.90 The patent drafter is also in a superior position compared to any second mover. In the context of

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88 See Ayres and Gertner, 101 Yale L J at 732 (cited in note 63) (“When even slight costs in contracting around a default rule are introduced, however, the choice of default rule can affect both the contractual equilibrium and the net social benefits of contracting, i.e., efficiency.”).

89 See Kesan and Banik, 2 Wash U J L & Policy at 53 (cited in note 87) (“This is consonant with a body of contracting literature that proposes that when parties are asymmetrically informed, default rules that penalize the more informed party will be welfare enhancing by inducing that party to reveal information.”).

90 Such a default rule can be seen as a penalty default rule, and can be useful for forcing parties to perform socially beneficial actions. See Ian Ayres and Robert Gertner, Filling Gaps in Incomplete Contracts: An Economic Theory of Default Rules, 99 Yale L J 87, 91 (1989):

Penalty defaults are designed to give at least one party to the contract an incentive to contract around the default rule and therefore to choose affirmatively the contract provision they prefer. In contrast to the received wisdom, penalty defaults are purposefully set at what the parties would not want—in order to encourage the parties to reveal information to each other or to third parties (especially the courts).
overlapping definitions, the costs associated with inventing around the first mover or accidental infringement are reduced when the patent drafter is explicit. The reduced uncertainty in the scope of the patent through explicit drafting reduces the likelihood of unintentional infringement, which should in turn increase investment in developing noninfringing technologies.

Moreover, explicit definitions reduce the possibility that the second mover will engage in wasteful "definition creation." That is, the second mover is less likely to try to develop, ex post, definitions that satisfy Markman but do not include their product. Such expenditures are wasteful because they have some positive cost and no offsetting social value. In the context of competing overlapping definitions, the cost of erroneously demarcating the patent's scope is reduced when the onus is placed on the patent drafter to be explicit due to the patent drafter's unique role in the patent system.

The inherent difficulty with overlapping definitions is ambiguity in language. Two existing bodies of law, contract law and the doctrine of equivalents, both struggle with the limitations of language and can shed light on the best construction of language.

1. Contract law's construction against the drafter.

The manner in which contract law resolves interpretive problems with ambiguous contract terms is analogous to the interpretive issues of ambiguous terms in patent claims. In contract interpretation the Supreme Court has held that "a contract should be construed most strongly against the drafter." The Supreme Court, in accordance with common law courts and academic commentators, has adopted a rule of construction against the drafter as the least-cost alternative. The same principles that guided the Supreme Court in contract interpretation also apply in patent claim construction. When the drafter is in the best position to defend against ambiguous terms, placing the onus on the drafter to be explicit provides for the most efficient result.

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91 Ex post definition creation lacks value because the activity seeks only to deny the proper scope of the patent.

92 See Craig Allen Nard, A Theory of Claim Interpretation, 14 Harv J L & Tech 1, 80 (2000) ("If the claim is ambiguous in that it is subject to at least two reasonable constructions, the judge may be well-advised to . . . adopt the construction that is less favorable to the party that drafted the language.").

2. The doctrine of equivalents' justified expansion of scope.

While the arguments presented above seem to suggest that the drafter should always bear the risk of ambiguity, the patent system might justifiably enlarge the scope of a patent in some instances. The patent system performs this scope enlargement under the doctrine of equivalents. When an adverse party's device is not within the literal language of the patent, "a patentee may invoke [the doctrine of equivalents] to proceed against the producer of a device 'if it performs substantially the same function in substantially the same way to obtain the same results.'"

This Comment specifically addresses the proper scope of the literal claim language. Nonetheless, the analysis for overlapping definitions applies with the same force to the doctrine of equivalents. In the Supreme Court's most recent explanation of the doctrine, the Court emphasized the need for the proper determination of the scope of the literal claim language. The Court found that the doctrine of equivalents should increase the scope of the patent, in certain circumstances, by providing equivalents of the literal elements of the patent claims. This rule is known as the "all elements rule," and requires that any equivalent of a patent element be linked to the literal claim language. Thus, in order to correctly apply the doctrine of equivalents, the determination of the proper scope of the literal claim language is necessary. Although the result may be similar, courts should not enlarge the scope of the patent under the guise of interpreting the literal language, but instead should rely on the doctrine of equivalents where the ap-


95 See Warner-Jenkinson Co, Inc v Hilton Davis Chemical Co, 520 US 17, 29 (1997):

There can be no denying that the doctrine of equivalents, when applied broadly, conflicts with the definitional and public-notice functions of the statutory claiming requirement. . . . Each element contained in a patent claim is deemed material to defining the scope of the patented invention, and thus the doctrine of equivalents must be applied to individual elements of the claim, not to the invention as a whole. It is important to ensure that the application of the doctrine, even as to an individual element, is not allowed such broad play as to effectively eliminate that element in its entirety.

96 Id. For example, the application of the doctrine of equivalents is most convincing in situations where (a) the feature distinguishing the adverse party's invention from the literal claim language could not have been reasonably foreseen by the patent drafter, and (b) had the distinguishing feature been reasonably foreseeable, the patent drafter would have included the feature in the drafting language. In such circumstances, the patent drafter could not have protected herself by being explicit.

97 See id at 40 ("The determination of equivalence should be applied as an objective inquiry on an element-by-element basis.").
propriate framework for enlarging patent scope can be faithfully followed.

B. Nonoverlapping Definitions

In the context of nonoverlapping definitions, the Rexnord court was correct: the proper scope of the patent includes the adoption of all such nonoverlapping definitions. When the adverse party’s definition is not within the scope of the patent holder’s definition—that is, a nonoverlapping definition—placing the burden of ambiguity on the adverse party provides for the most efficient result. Drafting a patent is a single-game decision: the patent drafter drafts the patent only once, and must make all her decisions based on all the rules of interpretation. The rule construing against the drafter for overlapping definitions mitigates any incentive to draft vaguely.

Developing plausible nonoverlapping definitions is socially wasteful and a costly proposition for both the patent drafter and the second mover.98 Parties must expend significant sums to develop plausible definitions, and this expenditure leads to no useful outcome. Value spent gaming the system by producing alternative plausible definitions does not further any goal of society, but only furthers the adverse party’s goal of avoiding the cost of infringement liability. Because it may be in the interest of the adverse party to produce plausible nonoverlapping definitions, the patent system should discourage this socially wasteful practice by creating interpretive rules that close off this litigation tactic.

In the context of nonoverlapping definitions, the patent drafter will not necessarily be in a better position to defend against the strategic actions of the adverse party. First, the cost to the patent drafter of developing definitions occurs ex ante, and occurs with every patent regardless of whether that patent becomes valuable or not. Second, the cost to the second mover will occur after the drafting, and thus only when a patent is valuable.99 While a rule adopting all nonoverlapping definitions encourages the patent drafter to be vague in the hopes that she can create nonoverlapping definitions ex post that will

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99 If the patent were not valuable, neither party would be concerned with infringement.
include a second mover's product, a rule denying the patent drafter nonoverlapping definitions provides the adverse party with incentives to develop new nonoverlapping definitions that deny the patent its appropriate scope. The inherent limits of language allow new definitions to be created ex post when such definitions were not within the patent drafter's consideration ex ante. In this context, the patent drafter is not in a better position to protect against the associated costs of improper demarcation of patents as compared to either the patent examiner or the second mover, simply because the patent holder is not in a better position to imagine definitions that might be later invented. A rule denying nonoverlapping definitions that come within the scope of the patent will force the patent drafter to expend the costs of developing all nonoverlapping definitions ex ante for every patent claim, whereas the adverse party will have such costs only when the patents are valuable. Moreover, the patent drafter already has incentives to be explicit, in the context of overlapping definitions, where the patent drafter is the least-cost avoider. A patent drafter will not engage in a strategy of ambiguity to gain more nonoverlapping definitions, which may or may not exist, only to lose overlapping definitions that the patent drafter already knows and understands how to properly include within the scope of the patent.

Including all nonoverlapping definitions within the scope of the patent reduces the total social waste of imperfect demarcation of patent scope. First, the patent drafter already has incentives to be clear and explicit to avoid forfeiting any overlapping definitions. Second, the patent drafter is not in a better position than the second mover to reduce the cost of erroneously demarcating the scope of the patent due to the improper inclusion or exclusion of nonoverlapping definitions. Finally, the patent drafter would have to engage in the costly

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100 See Wagner, 151 U Pa L Rev at 215–16 (cited in note 66) (discussing a patentee's incentive to draft inappropriately broad claims in hopes of gaining additional scope, presumably to include the invention of any second mover).
101 See Bender, 8 J Intel Prop L at 209 (cited in note 64).
102 See Ayres and Gertner, 99 Yale L J at 128 (cited in note 90):
Since the goal of a penalty default is to induce information revelation, lawmakers should consider the likelihood that the penalty will in fact result in information being revealed, the benefit (in more efficient reliance or precaution) of the revealed information, and the costs of explicitly contracting around the default. If the private information is acquired with economic resources, the value of information revelation must also be weighed against the private incentives to acquire it. Penalty defaults are therefore more likely to be efficient if the private information is acquired passively. In sum, a penalty default should be used if it results in valuable information revelation with low transaction costs.
103 See Part III.A.
104 Penalty default rules are only beneficial when the information can be produced efficiently. See Ayres and Gertner, 99 Yale L J at 128 (cited in note 90). See also text accompanying
effort of determining and developing all possible nonoverlapping definitions in each patent drafted, whereas the second mover will only have to expend this cost ex post once the patent is determined to be valuable. In light of all the incentives for first and second movers, the efficient outcome is obtained when the scope of the patent includes all nonoverlapping definitions, and those definitions satisfy the full extent of the Markman analysis.

CONCLUSION

An analysis of the incentives of each interpretive rule demonstrates that the AAI and Rexnord rules of construction used in conjunction, but under different circumstances, produce a more efficient patent system. In working to reconcile the seemingly opposing rules of construction, this Comment shows that when used in the appropriate context, the two rules reduce the cost of erroneously demarcating the scope of the patent.

note 102. In the context of nonoverlapping definitions, such information is not cheaply produced. See Douglas Lichtman, Rethinking Prosecution History Estoppel, 71 U Chi L Rev 151, 177 (2004) ("[T]he difficulty the applicant faced in crafting appropriate claim language up front, and the room that was left for reasonable disagreements between applicant and examiner[,] suggest that [doing better] would have been prohibitively expensive."). Lichtman is referring to drafting a claim up front that covers all the definitions that a patentee might eventually receive under the doctrine of equivalents, but the analysis works equally well for attempting to draft a claim that covers all alternative, nonoverlapping definitions.