

[Draft – April 2017]

BEHAVIORAL CLAIM CONSTRUCTION

*Jeremy W. Bock**

102 MINNESOTA LAW REVIEW __ (forthcoming)

ABSTRACT

Existing proposals for enhancing predictability in patent claim interpretation focus primarily on the process of adjudication and doctrinal issues, while rarely delving into the underlying psychological and environmental factors that might influence different readers to interpret the same claim very differently. There is a *Rashomon* problem in claim construction that has remained largely unexamined.

This Article undertakes the first detailed exploration of the behavioral elements—namely, cognitive biases, priors, and situational factors—that may affect how a given reader interprets a claim. Drawing on lessons from behavioral economics and cognitive psychology, this Article suggests a way to mitigate the problem of reader-to-reader variance in claim construction by *exploiting* cognitive biases instead of trying to eliminate them. Specifically, this Article identifies a rule of construction that the vast majority of the readers of a patent claim are likely to apply naturally as a “cognitive default.” This “cognitive default” rule may be implemented through an extension of an existing interpretive rule (specifically, means-plus-function analysis) to yield a first-order approximation of claim scope that is expected to be largely reader-invariant.

© 2017 Jeremy W. Bock

* Assistant Professor of Law, University of Memphis Cecil C. Humphreys School of Law.

TABLE OF CONTENTS

Introduction	2
I. Background	5
A. Overview of Claim Construction Issues	5
B. The Current Claim Construction Regime	9
1. The <i>Phillips</i> Methodology	9
2. Broadest Reasonable Interpretation	11
II. The Behavioral Elements	13
A. Heuristics and Cognitive Biases	14
1. Anchoring and Availability	15
2. Representativeness and Stereotyping	17
3. Egocentric Biases and Cognitive Dissonance	19
B. Priors	21
1. Technical Background	22
2. Legal Background	23
3. Personal Attitudes	24
C. Situational Considerations	26
1. Docket Pressures	27
2. Stakes and Consequences	31
3. Group Deliberation	32
D. Reader Comparison	34
III. Toward Reader-Invariant Claim Construction	36
A. The Need for a New Claim Construction Regime	36
B. Proposal: Means-Plus-Function Analysis for All Claims	39
C. Implications, Concerns, and Objections	45
1. Impact on the Disclosure Requirement	45
2. No Particular Audience?	46
3. Tradeoffs and Error Costs	48
4. Claim Construction: A Blended Inquiry?	52
Conclusion	53

INTRODUCTION

The claims of a patent define the “metes and bounds” of an invention over which the patent owner has a legal right to bar its practice by others. Whether a patent claim is valid and infringed turns on “claim construction”—the interpretation¹ of claim language in order to ascertain

¹ Some scholars have noted a distinction between “interpretation” and “construction.” See Tun-Jen Chiang & Lawrence B. Solum, *The Interpretation-Construction Distinction in Patent Law*, 123 YALE L.J. 530, 534-35 (2013) (differentiating between “determining the linguistic meaning of a text (‘interpretation’), and giving legal effect to that text

the boundaries of a patent claim. Despite the existence of a single, semi-specialized appellate court (i.e., the U.S. Court of Appeals for the Federal Circuit) that handles all patent appeals, claim construction remains notoriously unpredictable.² By way of diagnosis, scholars have undertaken doctrinal, historical, linguistic, and empirical analyses.³ However, much less attention has focused on analyzing claim construction through the lens of behavioral science—in particular cognitive and social psychology—in ascertaining why different readers⁴ would reach different interpretations of the same claim.

This Article provides the first detailed exploration of the *Rashomon*⁵ effect in claim construction: the existence of multiple perspectives regarding claim scope that may be grounded in the behavioral and psychological influences affecting the reader. Analyzing the behavioral aspects of claim construction may help us understand why a single claim may have N different meanings according to N different readers, who may be: inventors, patent attorneys, patent examiners, plaintiff’s litigation counsel, defendant’s litigation counsel, district judges, administrative patent judges, Federal Circuit judges, engineers, scientists, business people, investors, and many others who may or may not have a background in the relevant technology or the law.

To explore the problem of reader-dependence in claim construction, this Article evaluates the potential impact of the readers’ cognitive biases, priors, and situational considerations on their assessment of claim scope. Such “behavioral elements” are likely to affect how claims are interpreted because the canons that presently govern claim construction in federal court litigation, as well as the “broadest reasonable interpretation” used by the

(“construction”). For the purposes of this Article, “interpretation” and “construction” will be used interchangeably because they are largely treated as synonyms by various actors in the patent system to refer to the process of ascertaining claim scope. For example, examiners apply the “broadest reasonable *interpretation*” while district courts are often referred to as engaging in claim *construction*.

² See, e.g., Dan L. Burk & Mark A. Lemley, *Fence Posts or Sign Posts? Rethinking Patent Claim Construction*, 157 U. PA. L. REV. 1743, 1745 (2009) [hereinafter Burk & Lemley, *Fence Posts*] (“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.”); but see Jeffrey A. Leftsin, *The Measure of the Doubt: Dissent, Indeterminacy, and Interpretation at the Federal Circuit*, 58 HASTINGS L. J. 1025, 1092 (2007) (concluding that “claim construction on the whole has been no less determinate than other aspects of patent law”).

³ See *infra* Part I.A.

⁴ Throughout this Article, the term “reader” refers to anyone who reads a patent claim.

⁵ This is a movie about a murder told from the perspective of multiple witnesses, each of whom provides a different account of what happened. RASHOMON (Daiei Motion Picture Co. 1950).

U.S. Patent & Trademark Office (PTO), require the close parsing of claim terms. Because parsing involves the exercise of discretion in selecting, weighing, and applying multiple interpretive sources and rules, it provides various opportunities for behavioral elements to affect the analysis.

To mitigate the influence of behavioral elements in claim construction, this Article recommends moving away from the modern peripheral claiming regime⁶—which entails extensive parsing of claim language—to one that involves minimal parsing. An interpretive rule that requires minimal parsing is desirable for two reasons. *First*, the total population of potential readers for a given patent contains far more non-parsers (e.g., individuals who are not trained in legal analysis, such as engineers, scientists, business people, and investors) than parsers (e.g., attorneys and judges). *Second*, interpreting a patent claim with minimal parsing might actually yield a more predictable answer: The cognitive science and psychology literature suggest that those readers who do not engage in parsing—whether because they lack the requisite training in exegesis or because they are working under resource constraints that make them susceptible to taking cognitive shortcuts—are likely to come up with a construction that closely tracks the embodiments (that is, the illustrative examples and instantiations) disclosed in the patent.⁷ This is what I call the “cognitive default” answer.

As it happens, there exists a rule of claim interpretation whose application may yield a construction that largely corresponds to the “cognitive default” answer: means-plus-function analysis,⁸ which ties the scope of the claims to the structures disclosed in the patent document and their equivalents. Currently, means-plus-function analysis is permitted for use only in limited circumstances; this Article proposes that it be expanded to apply to *all* claim terms. Under an all-means-plus-function claim interpretation regime, we would have a default rule of construction that tracks what the non-parsing readers do *naturally* and also cabins the ability of the parsing readers to introduce interpretive variance and constructions that deviate substantially from the disclosed embodiments. As a result, a lay person and someone with expertise in patent law can both reach the same first-order approximation of the boundaries of a patent claim.

⁶ This is in contrast to the *traditional* (i.e., pre-Federal Circuit) principles of peripheral claiming, which, as chronicled by John Duffy, bear a greater resemblance to central claiming and means-plus-function analysis under 35 U.S.C. § 112(f). John F. Duffy, *Counterproductive Notice in Literalistic versus Peripheral Claiming*, 96 B.U. L. REV. 1197, 1206, 1211 (2016). Throughout this Article, the term “peripheral claiming,” without any adjectives, will generally refer to the modern, literalistic peripheral claiming principles established by the Federal Circuit. To avoid ambiguity, references to *traditional* peripheral claiming will be made explicitly with the appropriate modifier.

⁷ See *infra* Part II.

⁸ See 35 U.S.C. § 112(f).

This proposal operates on the counterintuitive principle that the interpretive rules for claim construction should embrace (rather than reject) the results of certain cognitive “errors” that a variety of readers are likely to commit reliably in the same or similar ways, as it may help yield predictable results. By contrast, the current claim construction regime uses a set of rules that only a small subset of the potential readers of a patent claim may be able to apply (e.g., attorneys and judges), but even this specialized group has difficulty applying the rules reliably. If the current rules of claim interpretation were modified so as to exploit certain cognitive biases that yield similar answers for the vast majority of heterogeneous readers, it might have the paradoxical effect of counteracting the variance in claim interpretations caused by other behavioral elements.

This Article proceeds in multiple Parts. Part I situates the *Rashomon* problem within the claim construction literature and summarizes the existing claim interpretation regime. Part II explains how certain behavioral elements such as cognitive biases, priors, and situational considerations may contribute to reader-dependence in assessments of claim scope. Part III presents one possible solution to mitigate reader-dependence: expanding the application of means-plus-function analysis to all claim terms. This Part also addresses potential concerns and objections and is followed by a brief Conclusion.

I. BACKGROUND

A. Overview of Claim Construction Issues

A patent has several parts. The specification sets forth a detailed description of the invention in a manner sufficient to allow an ordinary artisan in the relevant technical field to make and use it.⁹ A set of drawings is usually included to aid in the understanding of the subject matter disclosed.¹⁰ At the end of the patent document are the claims, which define the scope—i.e., the boundaries—of the invention.¹¹

During the lifecycle of a patent, its claims are crafted and later interpreted by a multitude of readers at different stages. To begin, an inventor talks to a patent attorney,¹² who prepares a patent application that is filed at the PTO and is examined by a patent examiner. After the patent

⁹ 35 U.S.C. § 112(a).

¹⁰ 35 U.S.C. § 113.

¹¹ 35 U.S.C. § 112(b)-(f).

¹² Inventors may also be represented by patent agents, who are non-lawyers registered to practice before the PTO.

issues, it may be asserted by the patentee against an accused infringer. In a patent suit, each party is represented by litigation counsel in federal court where the adjudicator is a district judge. During litigation, the accused infringer might also challenge the validity of the patent through an administrative proceeding at the PTO (e.g., inter partes review) that is conducted by administrative patent judges at the Patent Trial and Appeal Board (PTAB). On appeal from either the district court or the PTAB, the Federal Circuit judges will review the scope of the claims in connection with adjudicating liability issues. Outside of the litigation context, the patent may be reviewed by business people, engineers, investors, and others who might be making business decisions based on their impressions of what the scope of the claims might be.

The determination of claim scope is the key inquiry in every patent case (as well as in many transactions), as it underlies the assessment of whether a claim is valid and infringed. Claim construction is an exercise in exegesis involving the application of multiple—at times, conflicting¹³—canons under Federal Circuit decisional law, as most recently restated in *Phillips v. AWH Corp.*¹⁴ Claim construction has been the focus of considerable scholarly attention by virtue of its centrality in patent litigation and the difficulty of reliably ascertaining the boundaries of the invention.¹⁵ Commentators have pointed to the Federal Circuit’s reversal rate for district court claim constructions as a reflection of the uncertainty in determining claim scope.¹⁶ According to one estimate, the reversal rate has ranged between a high of 44% to a low of 16.5% on an annual basis.¹⁷

The literature contains a variety of explanatory theories for this

¹³ See 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, 362 (2008) (“[H]istorically, case law and commentary on claim construction have been replete with such a mélange of conflicting canons that one can find *some* historical support for almost any interpretive methodology.” (emphasis in original)).

¹⁴ 415 F.3d 1303 (2005) (en banc).

¹⁵ A collection of representative sources is provided in J. Jonas Anderson & Peter S. Menell, *Informal Deference: A Historical, Empirical, and Normative Analysis of Patent Claim Construction*, 108 NW. U. L. REV. 1, 4 n.6 (2014).

¹⁶ A number of empirical studies have analyzed the rate at which the Federal Circuit has reversed the district court’s claim construction. See, e.g., Shawn P. Miller, “Fuzzy” Software Patent Boundaries and High Claim Construction Reversal Rates, 17 STAN. TECH. L. REV. 809 (2015); Anderson & Menell, *supra* note 15; David L. Schwartz, *Pre-Markman Reversal Rates*, 43 LOYOLA L.A. L. REV. 1073 (2010); David L. Schwartz, *Practice Makes Perfect? An Empirical Study of Claim Construction Reversal Rates in Patent Cases*, 107 MICH. L. REV. 223 (2008) [hereinafter Schwartz, *Practice*]; Kimberly A. Moore, *Are District Court Judges Equipped to Resolve Patent Cases?*, 15 HARV. J.L. & TECH. 1 (2001); Christian A. Chu, *Empirical Analysis of the Federal Circuit’s Claim Construction Trends*, 16 BERKELEY TECH. L.J. 1075 (2001).

¹⁷ Anderson & Menell, *supra* note 15, at 1.

uncertainty and proposals for its mitigation. Some have suggested that claim construction is inherently indeterminate.¹⁸ Others, including some Federal Circuit judges,¹⁹ blame the de novo standard of review for claim constructions on appeal.²⁰ Some point to the schism within the Federal Circuit regarding the role of the specification in claim construction,²¹ and the resulting panel-dependence on appellate outcomes.²² Others have proposed alternative claim construction methodologies, such as applying linguistic techniques²³ or moving away from peripheral claiming and returning to central claiming.²⁴ Some have suggested that patentees should be required to disclose in the specification additional information to aid in claim construction, such as a glossary of terms and a list of interpretive

¹⁸ See, e.g., Burk & Lemley, *Fence Posts*, *supra* note 2, at 1745 (“[C]laim construction may be inherently indeterminate: it may simply be impossible to cleanly map words to things.”); Schwartz, *Practice*, *supra* note 16, at 259 (“Claim construction may be inherently indeterminate.”).

¹⁹ See Anderson & Menell, *supra* note 15, at 32 (describing disagreement among Federal Circuit judges regarding de novo review).

²⁰ *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1451 (Fed. Cir. 1998) (en banc) (“[C]laim construction, as a purely legal issue, is subject to de novo review on appeal.”).

²¹ See, e.g., Greg Reilly, *Improvidently Granted: Why the En Banc Federal Circuit Chose the Wrong Claim Construction Issue*, 80 U. CHI. L. REV. DIALOGUE 43, 45-46 (2013); R. Polk Wagner & Lee Petherbridge, *Is the Federal Circuit Succeeding? An Empirical Assessment of Judicial Performance*, 152 U. PA. L. REV. 1105, 1111 n.19, 1138, tbl.1 (2004) [hereinafter Wagner & Petherbridge, *Federal Circuit Succeeding*]. Polk Wagner and Lee Petherbridge assigned the judges on the Federal Circuit to one of three factions based on their preferred claim construction methodology: (1) the “proceduralists,” who emphasize the ordinary meaning of the claim terms and follow a strict, rules-based hierarchy of interpretive sources; (2) the “holistics,” who emphasize the specification and the prosecution history as interpretive sources and apply a more flexible, case-specific analysis; and (3) the “swing judges,” who comprise a middle group. *Id.* at 1111 n.19 & 1138, tbl.1. Wagner and Petherbridge found that the proceduralist methodology was applied in a clear majority (63.1%) of the cases. *Id.* at 1170.

²² Wagner & Petherbridge, *Federal Circuit Succeeding*, *supra* note 21, at 1163 (“We find . . . that the individual membership and overall composition of a three-judge panel that decides an appeal has a statistically significant effect on the methodological approach used to analyze claim construction issues.”).

²³ Kristen Osenga, *Linguistics and Patent Claim Construction*, 38 RUTGERS L.J. 61, 62-63 (2006).

²⁴ See, e.g., Burk & Lemley, *Fence Posts*, *supra* note 2, at 1747; Jeanne C. Fromer, *Claiming Intellectual Property*, 76 U. CHI. L. REV. 719, 735-39 (2009). “Peripheral claiming,” which is the current system of claiming, defines the outermost boundary of the patentee’s invention, while “central claiming” sets forth the core concept (or the gist) of the patentee’s invention. Burk & Lemley, *Fence Posts*, *supra* note 2, at 1747. According to John Duffy, the current version of peripheral claiming, which is based on Federal Circuit precedent, is distinct from the traditional form of peripheral claiming as practiced in the pre-Federal Circuit era, which bears a greater resemblance to means-plus-function analysis. Duffy, *supra* note 6, at 1206.

sources.²⁵ Still others believe that generalist²⁶ district judges may be poorly equipped to handle claim construction,²⁷ and point to specialized courts²⁸ or expedited claim construction appeals as potential solutions.²⁹

It is unclear which of the many theories surrounding the uncertainty in claim construction and the proposals for improving it are actually targeting its underlying problems rather than the symptoms. Like the proverbial blind men touching different parts of an elephant, each of the various theories and proposals in the literature focuses on different aspects of the claim construction conundrum, which may have several underlying pathologies that are intertwined. To this body of literature, this Article contributes an exploration of another facet of the problem: the behavioral aspect. The complaint about indeterminacy being “inherent”³⁰ in claim interpretation suggests there might be an unconscious aspect to it,³¹ such that an analytical inquiry through the lens of cognitive science and social psychology might be fruitful. The literature on the cognitive science and social psychology aspects of claim construction is relatively sparse and is largely limited to discrete sections in a handful of articles.³² This Article synthesizes this scattered literature and expands on it to provide a more detailed exploration of the behavioral factors that may influence how a reader interprets a claim, along with a specific proposal for mitigating them.

²⁵ Joseph Scott Miller, *Enhancing Patent Disclosure for Faithful Claim Construction*, 9 LEWIS & CLARK L. REV. 177, 183-84 (2005).

²⁶ See S. Jay Plager, *Abolish the Court of Federal Claims? A Question of Democratic Principle*, 71 GEO. WASH. L. REV. 791, 796-97 (2003) (observing that district judges are not patent specialists and most do not have scientific training).

²⁷ See Moore, *supra* note 16, at 38.

²⁸ See, e.g., Jay P. Kesan & Gwendolyn G. Ball, *Judicial Experience and the Efficiency and Accuracy of Patent Adjudication: An Empirical Analysis of the Case for a Specialized Patent Trial Court*, 24 HARV. J.L. & TECH. 393, 444 (2011); but 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. 1699, 1704 (2009) (reporting results of empirical study where “[t]he data do not reveal any evidence that the patent-experienced ALJs of the ITC are more accurate at claim construction than generalist district court judges”).

²⁹ See Moore, *supra* note 16, at 39.

³⁰ See *supra* note 18 and accompanying text.

³¹ Cf. Jeffrey A. Lefstin, *Claim Construction, Appeal, and the Predictability of Interpretive Regimes*, 61 U. MIAMI L. REV. 1033, 1058 (2007) [hereinafter Lefstin, *Interpretive Regimes*] (“The process of attaching meaning to a word, or associating a physical structure with a word, may be cognitively deeper and more primitive than the more abstract determinations demanded by patent law.” (footnote omitted)).

³² See, e.g., Fromer, *supra* note 24, at 763-67; Lefstin, *Interpretive Regimes*, *supra* note 31, at 1050-60.

B. *The Current Claim Construction Regime*

Currently, there are two systems of patent claim interpretation in use: (1) the claim construction methodology applied by federal district courts in accordance with *Phillips v. AWH Corp.*³³; and (2) the “broadest reasonable interpretation” (BRI) standard used in PTO proceedings.³⁴ In both systems, the claims are to be construed from the perspective of a “person having ordinary skill in the art” (PHOSITA),³⁵ who is a technically-skilled individual possessing an encyclopedic knowledge of all relevant prior art.³⁶ When reading patent claims, PHOSITA is assumed to be a careful, disinterested reader who, despite being untrained in the law, is unnaturally adept at exegesis.

1. *The Phillips Methodology*

The *Phillips* methodology applied by the district courts is a set of interpretive canons, some of which are patent-specific while others are analogous to those for statutory construction and contract interpretation.³⁷ The primary canons include the following: (1) unless the patentee acted as his own lexicographer,³⁸ the words of a claim are generally given their ordinary meaning as understood by a skilled artisan at the time of invention;³⁹ (2) the claims should be read in light of the specification;⁴⁰ and (3) the limitations from the specification should not be imported into the claims.⁴¹ Because these canons are often in tension, emphasizing certain ones over others can affect the extent to which the scope of a claim may extend beyond the embodiments disclosed in the specification. According to Polk Wagner and Lee Petherbridge, there exist two distinct camps of Federal Circuit judges who have different views on the relative importance

³³ 415 F.3d 1303 (2005) (en banc).

³⁴ Manual of Patent Examining Procedure § 2111 (9th ed. Rev. 07.2015, Nov. 2015) [hereinafter *MPEP*]; 37 C.F.R. §42.100(b).

³⁵ *Phillips*, 415 F.3d at 1313 (requiring PHOSITA perspective for *Phillips* methodology); *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004) (requiring PHOSITA perspective for BRI).

³⁶ *See In re Winslow*, 365 F.2d 1017, 1020 (C.C.P.A. 1966).

³⁷ *See Kelly Casey Mullally, Patent Hermeneutics: Form and Substance in Claim Construction*, 59 FLA. L. REV. 333, 339 n.33 (2007) (“[C]ourts have found it useful to rely on principles of contract and statutory interpretation for various aspects of claim construction. Which discipline presents the most useful analogy depends on the precise issue at hand.”).

³⁸ *Phillips*, 415 F.3d at 1316.

³⁹ *Id.* at 1312-13.

⁴⁰ *Id.* at 1315-16.

⁴¹ *Id.* at 1320-23.

of these canons: the “proceduralists,” who emphasize the “plain and ordinary meaning” of the claim terms and follow a strict, rule-based hierarchy of interpretive sources; and the “holistics,” who focus on the specification and the prosecution history and apply a more flexible, case-specific analysis.⁴²

Some commentators view the proceduralist approach as the superior methodology that better supports the public notice function of a patent claim.⁴³ However, the emphasis on finding the “plain and ordinary meaning” may entail a heavier reliance on extrinsic evidence (such as dictionaries), which may provide more opportunities for the introduction of bias than the use of intrinsic evidence, given the “virtually unbounded universe of potential extrinsic evidence of some marginal relevance that could be brought to bear on any claim construction question.”⁴⁴ Indeed, in some cases, the choice of dictionary might be outcome determinative.⁴⁵

But the holistic approach may also be problematic. There is a fine line between reading a limitation into a claim and reading it in light of the specification. These complementary canons relating to the use of the specification in claim construction have created mischief because it is difficult to apply one canon reliably without running afoul of the other.⁴⁶ Depending on his agenda or priors, the reader of a claim can emphasize one canon over the other to achieve a particular result. As such, the specification, despite being the “the single best guide to the meaning of a disputed term,”⁴⁷ may be selectively relied upon to varying degrees to suit the reader’s purposes.

Whether one is a proceduralist, a holistic, or somewhere in between, the *Phillips* methodology requires one to engage in the act of parsing claim language, which is a cognitively-intensive process that entails analyzing

⁴² Wagner & Petherbridge, *Federal Circuit Succeeding*, *supra* note 21, at 1111 n.19 & 1138, tbl.1.

⁴³ See R. Polk Wagner & Lee Petherbridge, *Did Phillips Change Anything? Empirical Analysis of the Federal Circuit’s Claim Construction Jurisprudence*, in *INTELLECTUAL PROPERTY & THE COMMON LAW* 123, 143-45 (Shyamkrishna Balganesh ed., 2013).

⁴⁴ *Phillips*, 415 F.3d at 1318.

⁴⁵ Joseph Scott Miller & James A. Hilsenteger, *The Proven Key: Roles & Rules for Dictionaries at the Patent Office and the Courts*, 54 *AM. U. L. REV.* 829, 876 (2005) (“[D]ifferences among different dictionaries can . . . generate different claim construction analyses.”).

⁴⁶ Burk & Lemley, *Fence Posts*, *supra* note 2, at 1771-72 (“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 into the claim.”).

⁴⁷ *Vitronics Corp. v. Conceptronic*, 90 F.3d 1576, 1582 (Fed. Cir. 1996) (“[T]he specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.”).

claim terms and exercising judgment on the selection of competing interpretive canons and sources. As discussed *infra*, this process may leave a reader susceptible to allowing various behavioral elements to affect his interpretation of a claim.⁴⁸

2. Broadest Reasonable Interpretation

The PTO's method of interpreting claims is the "broadest reasonable interpretation" (BRI),⁴⁹ which is used by patent examiners during examination⁵⁰ and by PTAB judges during administrative proceedings for reviewing the validity of issued patents, such as inter partes review.⁵¹ BRI is supposed to make it easier to invalidate a claim by making it broader in scope than it otherwise would be when construed by a district court.⁵²

BRI does not correspond to the broadest *possible* meaning.⁵³ As contemplated by the Federal Circuit, BRI is "the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant's specification."⁵⁴ According to the Manual of Patent Examining Procedure (MPEP)—the

⁴⁸ See *infra* Parts II and III.A.

⁴⁹ The term "broadest reasonable *construction*" is also used as well, and is used interchangeably with "broadest reasonable interpretation." *E.g.*, In re Cuozzo Speed Techs., LLC, 793 F.3d 1268, 1276-1277 (Fed. Cir. 2015) ("This court has approved of the broadest reasonable *interpretation* standard in a variety of [PTO] proceedings [W]e have cited the long history of the PTO's giving claims their broadest reasonable *construction*." (emphases added and footnote omitted)).

⁵⁰ In re Morris, 127 F.3d 1048, 1054 (Fed. Cir. 1997).

⁵¹ 37 C.F.R. §42.100(b) (specifying use of "broadest reasonable construction" in inter partes review proceedings). Other PTO administrative proceedings where BRI is used include reexaminations, see In re Yamamoto, 740 F.2d 1569, 1571-72 (Fed. Cir. 1984), reissues, see In re Reuter, 670 F.2d 1015, 1019 (CCPA 1981), and interferences, see Yorkey v. Diab, 605 F.3d 1297, 1300-1301 (Fed. Cir. 2010).

⁵² In re Hyatt, 211 F.3d 1367, 1372 (Fed. Cir. 2000) (noting that applying the "broadest reasonable interpretation" standard "serves the public interest by reducing the possibility that claims, finally allowed, will be given broader scope than is justified" (internal quotation marks and citation omitted)); see also Dawn-Marie Bey & Christopher A. Cotropia, *The Unreasonableness of the Patent Office's "Broadest Reasonable Interpretation" Standard*, 37 AIPLA Q.J. 285, 303 (2009) ("The requirement that the USPTO give the claim language its 'broadest' reasonable interpretation necessarily contemplates a larger resulting claim scope than a district court would determine under the normal interpretation methodology without the 'broadest' lens.").

⁵³ MPEP, *supra* note 34, at § 2111, pp. 2100-37.

⁵⁴ *Morris*, 127 F.3d at 1054.

PTO's reference manual for patent examination⁵⁵—BRI requires that the words of a claim be given their “plain meaning,” which is the ordinary and customary meaning known to PHOSITA, unless it would be inconsistent with the specification (such as when the applicant has acted as his own lexicographer or if there is a disclaimer).⁵⁶ While the ordinary and customary meaning may be gleaned from “a variety of sources, including the words of the claims themselves, the specification, drawings, and prior art,”⁵⁷ it is improper to import limitations from the specification into the claims when applying BRI.⁵⁸

Notably, these characteristics of BRI resemble the *Phillips* methodology applied by the district courts,⁵⁹ with some commentators observing that BRI is materially indistinguishable⁶⁰ from the *Phillips* methodology.⁶¹ According to one estimate by PTAB Lead Judge Michael Tierney, the choice between BRI and the *Phillips* methodology would not change the result in 90% of cases.⁶² However, other commentators have characterized BRI as a distinct interpretive process—wholly separate from that of the *Phillips* methodology used by the district courts—that is “incurably

⁵⁵ A description of the purpose of the MPEP is provided in its Foreword page. *MPEP*, *supra* note 34.

⁵⁶ *Id.* at § 2111.01.

⁵⁷ *Id.*

⁵⁸ *Id.*

⁵⁹ *See* Bey & Cotropia, *supra* note 52, at 309 (“[S]ection 2111 . . . recites the same methodology used in district courts to interpret claims.”). MPEP § 2111-2111.05 and the PTAB opinions, which tend to lay out the BRI standard in detail, cite Federal Circuit claim construction cases that are appeals from district court litigation.

⁶⁰ Under this view, the primary difference between them would lie not in any interpretive canons, but rather in the application of the presumption of validity: when there is an ambiguity, a district court may construe the claim so as to preserve its validity (as a last resort), *see Phillips*, 415 F.3d at 1327, whereas an examiner applying BRI does not because the presumption of validity is inapplicable to any proceedings at the PTO. *See* In re Etter, 756 F.2d 852, 855-59 (Fed. Cir. 1985) (en banc).

⁶¹ Brief of Amicus Curiae Paul R. Michel in Support of Neither Party, *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131 (2016) (No. 15-446) at 8 (“With the exception of looking to disclaimers in the prosecution history under *Phillips*, but not under BRI, these standards are basically the same”); Brief of Amicus Curiae Unified Patents Inc. in Support of Respondent, *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131 (2016) (No. 15-446) at 27-29 (“[T]here is little difference between BRI and a *Phillips* claim construction . . . if properly applied, these tools should lead to identical constructions, whether they are made in the PTO from the point of view of examination or in district court from the point of view of litigation.”); Scott A. McKeown, *BRI and Phillips are No Different—Unified Patents Responds*, IPWATCHDOG (Apr. 17, 2016), at <http://www.ipwatchdog.com/2016/04/17/bri-phillips-no-different/id=68340/>.

⁶² Joseph Marks, *PTAB Chief Judge: Don't Sweat Cuozzo*, 92 PAT. TRADEMARK & COPYRIGHT J. 861 (July 20, 2016).

ambiguous” and “severely lacking.”⁶³ The description of BRI in the MPEP has been criticized for vagueness as it apparently lists the general principles of the *Phillips* methodology without elaborating on “the specifics of the BRI standard unique to the USPTO.”⁶⁴ Indeed, some have argued for the elimination of BRI in favor of having the PTO apply the same interpretive methodology as the district courts.⁶⁵

Regardless of which view of BRI is correct, both views describe BRI as a process of interpretation, which, like the *Phillips* methodology, requires the reader to parse claim terms using a variety of interpretive sources and rules. As explored in the next section, this need for parsing may introduce opportunities for behavioral elements to influence the analysis.

II. THE BEHAVIORAL ELEMENTS

Currently, patent claim interpretation (whether under *Phillips* or BRI) is a highly analytical endeavor that requires a reader to interpret text through the exercise of judgment and discretion in the selection of the pertinent interpretive sources, the appropriate interpretive canons, and the manner of analysis. As discussed below, the exercise of judgment and discretion in the course of parsing claim language may provide opportunities for cognitive biases, priors, and situational considerations to affect the end result, leaving claims susceptible to being treated as a “nose of wax.”⁶⁶ This can yield highly divergent assessments of claim scope when the same interpretive methodology (e.g., the *Phillips* methodology in district court litigation) is applied to the same claim by two different readers, each of whom brings his own behavioral “baggage” to the analysis. This is illustrated in Figure 1.

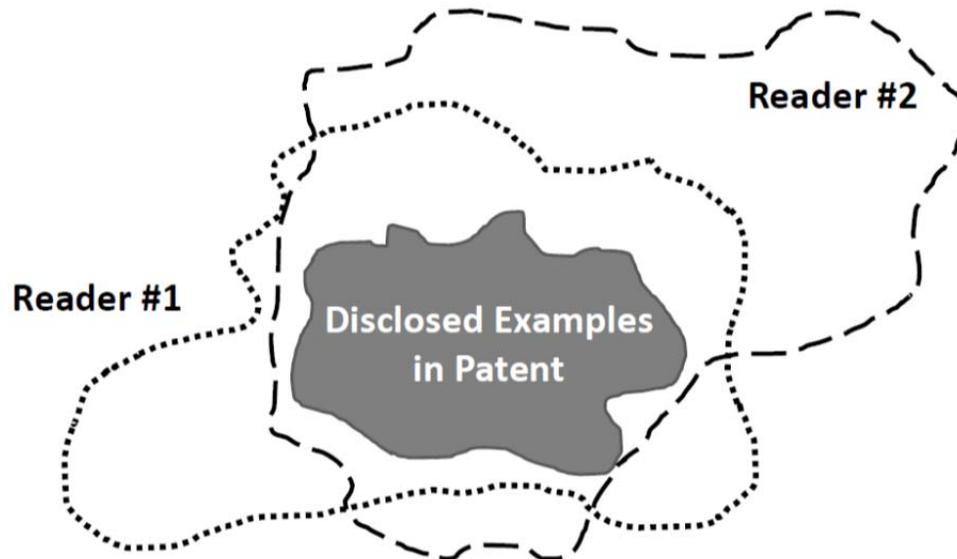
⁶³ Bey & Cotropia, *supra* note 52, at 288.

⁶⁴ *Id.* at 309-10.

⁶⁵ See, e.g., Michael Risch, *The Failure of Public Notice in Patent Prosecution*, 21 HARV. J.L. & TECH. 179, 180 (2007) (arguing for “the abandonment of the ‘broadest reasonable construction’ rule for interpreting claims in pending patent applications” and proposing that “pending applications . . . be construed using the same rule used in litigation”).

⁶⁶ The Federal Circuit has used this phrase to express concern with attempts by parties to twist the meaning of the claims to serve a particular purpose. See *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1351 (Fed. Cir. 2001) (“A patent may not, like a ‘nose of wax,’ be twisted one way to avoid anticipation and another to find infringement.” (quoting *Sterner Lighting, Inc. v. Allied Elec. Supply, Inc.*, 431 F.2d 539, 544 (5th Cir. 1970))).

Figure 1: Reader-Dependent Assessments of Claim Scope



This Part endeavors to unpack a reader’s behavioral “baggage” by providing an overview of the various behavioral elements and a discussion of how they might impact claim interpretation. It is worth noting that each behavioral element may not necessarily operate alone. Indeed, it is not uncommon for multiple behavioral elements to interact synergistically. In some cases, one behavioral element may mute or counteract the influence of another behavioral element.

In organizing the discussion, the behavioral elements are classified into three broad categories: (1) heuristics and cognitive biases (i.e., unconscious decision-making); (2) priors (i.e., the reader’s background knowledge and attitudes); and (3) situational considerations (i.e., the impact of a reader’s environment).

A. Heuristics and Cognitive Biases

Decision-making is a cognitive operation handled by two systems that co-exist in the mind: “System 1,” which is the unconscious, intuitive, and impressionistic decision-making process that operates quickly (if not automatically); and “System 2,” which is the conscious, deliberative, and

effortful decision-making process that operates more slowly.⁶⁷ System 1 relies heavily on heuristics, which are mental shortcuts people use unconsciously to process complex information and manage uncertainty.⁶⁸ In general, a heuristic operates by substituting a difficult question with an easier one.⁶⁹ This can lead to an imperfect answer, which, depending on the circumstances, may be adequate or erroneous.⁷⁰ When heuristics yield errors, they can be systematic in nature, giving rise to cognitive biases.⁷¹ System 2, which allows for self-criticism and self-reflection, has the ability to resist, question, and correct the conclusions reached by the heuristics of System 1.⁷² However, System 2 will often adopt or ratify the answers provided by System 1, especially if the former is lazy or weak, or if emotions are involved.⁷³ In essence, a decision reached through the unconscious operation of a heuristic via System 1 may become the subject of conscious deliberation and eventual justification via System 2.

In claim construction, different results may be obtained depending on the extent to which the answer provided by System 1 is modified by System 2. This dynamic (and terminology) will be appear throughout this Article.

1. Anchoring and Availability

Anchoring occurs when a person's judgment is heavily influenced by some initial piece of information received.⁷⁴ It has been observed in experimental studies demonstrating how judges and juries are prone to treating an initial damages estimate as a starting point that materially influences the ultimate amount awarded.⁷⁵ A related phenomenon is the

⁶⁷ DANIEL KAHNEMAN, THINKING, FAST AND SLOW 20-21 (2011).

⁶⁸ See Amos Tversky & Daniel Kahneman, *Judgment under Uncertainty: Heuristics and Biases*, 185 SCI. 1124, 1124 (1974); see also KAHNEMAN, *supra* note 67, at 98 (“The technical definition of *heuristic* is a simple procedure that helps find adequate, though often imperfect, answers to difficult questions.” (emphasis in original)).

⁶⁹ KAHNEMAN, *supra* note 67, at 97-99.

⁷⁰ *Id.* at 98 (“There is a heuristic alternative to careful reasoning, which sometimes works fairly well and sometimes leads to serious errors.”).

⁷¹ Tversky & Kahneman, *supra* note 68, at 1124 (“In general, these heuristics are quite useful, but sometimes they lead to severe and systematic errors.”).

⁷² KAHNEMAN, *supra* note 67, at 99 (“System 2 has the opportunity to reject [the] intuitive [System 1] answer, or to modify it by incorporating other information.”).

⁷³ KAHNEMAN, *supra* note 67, at 99 (“[A] lazy System 2 often follows the path of least effort and endorses a heuristic answer without much scrutiny of whether it is truly appropriate.”); see also *id.* at 103 (“In the context of attitudes . . . System 2 is more of an apologist for the emotions of System 1 than a critic of those emotions . . .”).

⁷⁴ Tversky & Kahneman, *supra* note 68, at 1128-29.

⁷⁵ See, e.g., Andrew J. Wistrich, Chris Guthrie & Jeffrey J. Rachlinski, *Can Judges Ignore Inadmissible Information? The Difficulty of Deliberately Disregarding*, 153 U. PA. L REV. 1251, 1291 (2005) (reporting that “the high-anchor judges gave substantially higher

availability heuristic, which refers to the tendency of people to base judgments on information that comes to mind easily (due to, for example, frequency or recency), as opposed to items that are more difficult to recall or retrieve.⁷⁶

Anchoring and availability may contribute to reader-dependence in claim interpretation when different readers work with different information sets, whereby a piece of information that serves as an interpretive anchor or is particularly salient due to availability may be different for each reader. As Jeffrey Lefstin has observed, for a given claim construction issue, the information the litigators have reviewed, the district judge has considered, and the Federal Circuit judges have been presented with on appeal may differ in both quantity and substance because the information available to each of these three types of readers has been successively filtered for brevity, relevance, and admissibility as the litigation progresses.⁷⁷

Similarly, in proceedings at the PTO, the inventor, the patent attorney, the examiner, and the PTAB judges all work with different information sets relating to the same claim when evaluating its scope under BRI. This may arise from not only the different quantity of information available to the different readers about the invention, but also differences in the nature of the proceedings: As between an ex parte proceeding (e.g., prosecution) and an adversarial one (e.g., a PTAB post-grant proceeding), the latter type of proceeding allows the reader to be exposed to a wider universe of possible claim interpretations.

In addition, the difference in information sets may influence how a reader interprets a claim through a phenomenon known as the “Curse of Knowledge”: Information, once learned, can be difficult to ignore.⁷⁸ Studies by Jeffrey Rachlinski, Andrew Wistrich, and Chris Guthrie suggest that judges who are exposed to inadmissible or irrelevant information appear to be unconsciously influenced by such information when they later decide liability and damages issues—even if they had issued an earlier ruling to exclude the same information.⁷⁹ In the context of claim construction, the

awards and the low-anchor judges gave substantially lower awards”); Jennifer K. Robbennolt & Christina A. Studebaker, *Anchoring in the Courtroom: The Effects of Caps on Punitive Damages*, 23 LAW & HUM. BEHAV. 353, 367 (1999) (finding that “as the level of the [punitive damages] cap increased, the size and variability of the awards increased as well”).

⁷⁶ Tversky & Kahneman, *supra* note 68, at 1127.

⁷⁷ Lefstin, *Interpretive Regimes*, *supra* note 31, at 1050-53.

⁷⁸ See Colin Camerer, George Loewenstein & Martin Weber, *The Curse of Knowledge in Economic Settings: An Experimental Analysis*, 97 J. POL. ECON. 1232, 1232 (1989) (“Better-informed agents are unable to ignore private information even when it is in their interest to do so; more information is not always better.”).

⁷⁹ See, e.g., Chris Guthrie, *Misjudging*, 7 NEV. L.J. 420, 422-28 (2007).

curse of knowledge is often manifested in constructions—by litigation counsel and judges alike—that are heavily influenced by their knowledge of the idiosyncracies of the accused products at issue, which is a practice that the Federal Circuit (largely) disapproves.⁸⁰

Apart from the differences in the content of the information sets, information *ordering* may also impact which pieces of information may serve as anchors and/or achieve salience through availability. The presentation of claim construction arguments in a highly compact, concentrated form within a short period of time (e.g., a Federal Circuit appeal or a PTAB post-grant proceeding), as opposed to a sequential, drawn-out, evolving process (e.g., district court litigation or patent prosecution),⁸¹ could lead to different assessments of claim scope depending on whether the earliest or the most recent information is accorded disproportionate weight through primacy or recency effects, respectively.⁸²

2. Representativeness and Stereotyping

The tendency of people to make systematic errors in judgment regarding whether an item, X, is a member of a class, Y, has been attributed to the representativeness heuristic,⁸³ which is grounded in the tendency to stereotype.⁸⁴ This cognitive bias arises when a person fails to evaluate whether X has the necessary, essential characteristics of Y, and, instead, focuses on the degree to which X looks like or resembles a stereotypical member of class Y.⁸⁵ Stereotyping is a System 1 process whereby categories are represented by “prototypical exemplars,” in which “we hold in memory a representation of one or more ‘normal’ members of these categories.”⁸⁶ Because System 1 processes occur unconsciously and

⁸⁰ See *infra* notes 191-195 and accompanying text.

⁸¹ Lefstin, *Interpretive Regimes*, *supra* note 31, at 1056-57 (outlining order effects in claim construction).

⁸² A classical experiment on primacy and recency is provided in Norman Miller & Donald T. Campbell, *Recency and Primacy in Persuasion as a Function of the Timing of Speeches and Measurements*, 59 J. ABNORMAL & SOC. PSYCHOL. 1 (1959) (using trial simulation to study relationship between primacy and recency effects). A collection of cites reflecting the rich literature on this subject is provided in Lefstin, *Interpretive Regimes*, *supra* note 31, at 1056 n.90.

⁸³ See KAHNEMAN, *supra* note 67, at 151-52, 156-59.

⁸⁴ See *id.* at 156-59, 168.

⁸⁵ See *id.* at 151-52, 156-59, 168.

⁸⁶ *Id.* at 168; Eleanor Rosch, *Cognitive Representations of Semantic Categories*, 104 J. EXP. PSYCH.: GENERAL 192, 225, 230 (1975) (finding that “cognitive representations of categories [e.g., vehicle] appeared to be more similar to the good examples [e.g.,

automatically,⁸⁷ the deliberative process of System 2 may be necessary to go beyond the initial answer provided by stereotyping to properly categorize non-stereotypical items.⁸⁸

In the interpretation of claims, the effect of stereotyping may lead a reader to interpret a claim more narrowly than warranted under the current claim construction regime. In most instances, the stereotype that represents the scope of a claim would be the preferred embodiment of the invention described in the specification. If the reader's System 2 is weak, the reader may not effectively parse the claim language to cover non-stereotypical items beyond the preferred embodiment. That is, a reader who is unable to fully engage in System 2 deliberation to methodically parse the claim language (whether because of time constraints or lack of training in exegesis) may unconsciously rely on the preferred embodiment as the mental representation of the scope of a particular claim, thereby substantially narrowing its scope. In this manner, it is possible that a time-pressed examiner may be unconsciously comparing the preferred embodiment—rather than the full scope of the claim—to the prior art, which would make it less likely that a claim will be found anticipated or obvious. Likewise, a reader, such as an engineer, who is unschooled in the principles of claim construction may reach the conclusion that there is no infringement based on a comparison of the accused product and the preferred embodiment rather than the full scope of the claims according to the *Phillips* methodology.

Notably, the nature of the claim language itself might aggravate the tendency of readers to rely on the representativeness heuristic or stereotyping. Research suggests that concrete text is more memorable and more readily recalled than abstract text.⁸⁹ This result holds across a variety of different subject matter, including technical information.⁹⁰ This suggests that the preferred embodiment of the invention as set forth in the

automobile] than the poor examples [e.g., blimp]").

⁸⁷ KAHNEMAN, *supra* note 67, at 20-21.

⁸⁸ *Cf. id.*

⁸⁹ Mark Sadoski, Ernest T. Goetz & Joyce B. Fritz, *Impact of Concreteness on Comprehensibility, Interest, and Memory for Text: Implications for Dual Coding Theory and Text Design*, 85 J. EDUC. PSYCH. 291, 301 (1993) (reporting results of experiments showing that "[i]mmediate and delayed recall of sentences and paragraphs of varying lengths revealed that concrete information was consistently and overwhelmingly better recalled than abstract information" and that "concrete sentences were recalled about twice as well as abstract sentences both immediately and 5 days later").

⁹⁰ Mark Sadoski, Ernest T. Goetz & Maximo Rodriguez, *Engaging Texts: Effects of Concreteness on Comprehensibility, Interest, and Recall in Four Text Types*, 92 J. EDUC. PSYCH. 85, 90-91 (2000) (reporting results of experiment showing that "[c]oncrete exposition [science and math text] was recalled 1.35 times as much as abstract exposition").

specification might be easier to recall than the claim language—which, by its very nature, is an abstract description of the invention⁹¹ and thus imposes a higher cognitive load on the reader as it must be parsed to form a mental representation. As Doug Lichtman has noted, “someone skilled in the art might find it easier to read simple, concrete claim language (‘shoelace’) rather than more abstract expressions (‘mechanism by which to bind tightly around the foot’) that are in fact technically superior.”⁹²

3. Egocentric Biases and Cognitive Dissonance

How a person interprets information may be subject to “egocentric” or “self-serving” biases, which can be reflected in, for example, an overestimation of one’s own abilities or an inflated view of the merits of one’s positions.⁹³ Experimental studies suggest that lawyers’ views of the strengths or weaknesses of a case are heavily influenced by which side they represent.⁹⁴ Relatedly, new information may be interpreted unconsciously in a way that supports or confirms pre-existing beliefs; this is known as “confirmation bias.”⁹⁵

In the context of claim construction, egocentric biases may be pronounced in any reader who has to advocate for or otherwise justify his or her interpretation. This is commonly reflected in the behaviors of the respective litigation counsel for the patentee and that of the accused infringer, both of whom parse the claim language using a selection of interpretive canons and sources that cast their respective positions in the

⁹¹ See Kevin Emerson Collins, *Bilski and the Ambiguity of “An Unpatentable Abstract Idea,”* 15 LEWIS & CLARK L. REV. 37, 50 (2011) (“Abstraction in the language of a patent claim is simply generality in the claim language. Here, claims become more abstract by describing an invention with more and more generality, and thus less and less detail, and encompassing a larger and larger set of distinct embodiments.” (footnotes omitted)).

⁹² See Douglas Lichtman, *Substitutes for the Doctrine of Equivalents: A Response to Meurer and Nard*, 93 GEO. L.J. 2013, 2015 (2005).

⁹³ See Guthrie, *supra* note 79, at 435-36.

⁹⁴ See, e.g., Linda Babcock, George Loewenstein, Samuel Issacharoff & Colin Camerer, *Biased Judgments of Fairness in Bargaining*, 85 AM. ECON. REV. 1337, 1341 (1995) (finding that “[t]here was a strong tendency toward self-serving judgments of fairness and predictions of the judge’s award when subjects knew their roles”).

⁹⁵ See Raymond S. Nickerson, *Confirmation Bias: A Ubiquitous Phenomenon in Many Guises*, 2 REV. GEN. PSYCHOL. 175, 175 (1998) (defining confirmation bias as “unwitting selectivity in the acquisition and use of evidence”); Charles G. Lord, Lee Ross & Mark R. Lepper, *Biased Assimilation and Attitude Polarization: The Effects of Prior Theories on Subsequently Considered Evidence*, 37 J. PERSONALITY & SOC. PSYCHOL. 2098, 2106 (1979) (“Subjects’ decisions about whether to accept a study’s findings at face value or to search for flaws . . . seemed to depend . . . on whether the study’s results coincided with their existing beliefs.”).

best possible light, while often having difficulty acknowledging any weaknesses in their arguments. The work product of judges may also reflect self-serving biases, as they may be seeking to avoid reversal, convince colleagues, or achieve vindication. An individual judge may also have a strong interest in taking positions consistent with his or her prior rulings.⁹⁶

Indeed, the desire for consistency might be a factor in how the PTAB analyzes claim scope during inter partes review. Because the same three-judge PTAB panel decides whether to institute an inter partes review proceeding *and also* decides the ultimate issue of patentability if a proceeding is instituted, some observers have attributed the PTAB's high "kill rate"⁹⁷ to possible confirmation bias on the part of the panel judges, as a finding of unpatentability would be consistent with their decision to institute review.⁹⁸ Cognitive dissonance theory⁹⁹ predicts that PTAB judges could be prone to discounting evidence and claim construction arguments that are inconsistent with their institution decisions.¹⁰⁰ To the extent that confirmation bias may affect how PTAB judges construe claims during an inter partes review proceeding that has been instituted, the bias would likely exist toward interpreting claims broadly, which would increase the likelihood of an invalidity finding.

⁹⁶ See ROBERT B. CIALDINI, *INFLUENCE: THE PSYCHOLOGY OF PERSUASION* 60 (2007) (noting commonly-held perception that inconsistency is an undesirable personality trait); *id.* at 61 (observing that consistency is "a convenient, relatively effortless, and efficient method for dealing with [complexity]"); see also Jeremy W. Bock, *Restructuring the Federal Circuit*, 3 N.Y.U. J. INTELL. PROP. & ENT. L. 197, 221 (2014) [hereinafter Bock, *Restructuring*] ("[Inconsistency] could expose [judges] to the risk of losing face. . . . At the same time, it may take less work for a judge to default to his or her prior position . . .").

⁹⁷ As of June 30, 2016, in inter partes review proceedings for which there was a final written decision, all claims were found unpatentable in 70% of cases; some (but not all) claims were found unpatentable in 15% of cases; and none of the claims were found unpatentable in 14% of cases. U.S. PATENT & TRADEMARK OFFICE, *Patent Trial and Appeal Board Statistics* 10 (June 30, 2016), at <http://www.uspto.gov/sites/default/files/documents/2016-6-30%20PTAB.pdf>.

⁹⁸ See, e.g., *Ethicon Endo-Surgery, Inc. v. Covidien LP*, No. 2014-1771, 2016 U.S. App. LEXIS 11296 at *10 (Fed. Cir. June 22, 2016) (Newman, J., dissenting from denial of rehearing en banc) ("[A]ssigning the same PTAB panel to both institute and conduct an *inter partes* review . . . has the taint of prejudgment. Many commentators, including the amici curiae in this case, point to the PTO's own statistics as evidence of prejudgment, calling the merits phase 'a largely rubber-stamp proceeding.'" (internal citation omitted)).

⁹⁹ LEON FESTINGER, *A THEORY OF COGNITIVE DISSONANCE* 2-3 (1957).

¹⁰⁰ Cf. Jay P. Kesan, *Carrots and Sticks to Create a Better Patent System*, 17 BERKELEY TECH. L.J. 763, 780-81 (2002) (applying post-decision cognitive dissonance theory to argue that opposition proceedings should occur pre-grant in order minimize the cognitive dissonance of PTO personnel).

B. Priors

A reader's background, experiences, and attitudes—in a word, her “priors”¹⁰¹—are the building blocks for her *schemas*, which may shape how she interprets a claim.¹⁰² A schema is one's “organized knowledge of the world” that provides a contextual framework for interpreting new information regarding a particular subject.¹⁰³ An individual has numerous schemas covering a variety of topics. To illustrate how schemas operate, consider the following sentence: “Number 37 knocked the cover off the ball.”¹⁰⁴ To someone who is familiar with the game of baseball, this sentence may be readily interpreted as a baseball player wearing number 37 on his jersey who hit the ball really hard, possibly scoring a home run.¹⁰⁵ One who has a mental framework of details typically associated with baseball games—i.e., a “baseball schema”—can readily comprehend this sentence, whereas someone without any familiarity with baseball may either have difficulty understanding the sentence without additional information, or, alternatively, may have a different schema that would allow him or her to reach a completely different interpretation (e.g., robotic sewing machine number 37 malfunctioned and damaged a ball by ripping off its cover).¹⁰⁶

In the context of claim construction, priors and schemas may vary considerably from reader to reader, and their impact on interpretation is discussed below.

¹⁰¹ In the literature, the term “priors” or “prior” is often used in the context of discussing Bayes's Theorem. *See, e.g.*, Jonathan J. Koehler, *On Conveying the Probative Value of DNA Evidence: Frequencies, Likelihood Ratios, and Error Rates*, 67 U. COLO. L. REV. 859, 863-64 (1996). (“According to Bayesian logic, one's prior beliefs (i.e., the beliefs one holds prior to the introduction of new evidence) are combined with a quantitative measure of the probative value of the new evidence to form posterior beliefs.”). More generally, the term “priors” is also used in the literature to refer to a person's “underlying assumptions and conceptual commitments.” Margaret Jane Radin, *Of Priors and Of Disconnects*, 127 HARV. L. REV. F. 259, 260 (2014). Unless otherwise noted, the term “priors” is being used in this Article in the latter—more general—sense.

¹⁰² *See* Golden, *supra* note 13, at 330 (“It is well known that how a person . . . understands a legal document can depend strongly on that person's mental framework and background knowledge.” (footnote omitted)).

¹⁰³ Richard C. Anderson, *Role of the Reader's Schema in Comprehension, Learning, and Memory*, in THEORETICAL MODELS AND PROCESSES OF READING 476, 476-79 (Donna E. Alvermann et al. eds., 6th ed. 2013).

¹⁰⁴ *Id.* at 476-77 (providing similar example).

¹⁰⁵ *Id.*

¹⁰⁶ *See id.*

1. Technical Background

Readers with technical expertise relating to a particular technology may have developed various schemas relating to that subject. And like the people who understand the “Number 37 . . .” sentence in the context of baseball, technically-knowledgeable readers may unconsciously read into the claims extra details or assumptions furnished by their schemas, which may not be apparent to someone who lacks the requisite technical expertise. As such, it is possible that someone with technical expertise may be prone to interpreting certain claims more narrowly than someone without such knowledge.

For example, the proliferation of functional claims in issued patents, especially those relating to software,¹⁰⁷ suggests that examiners do not notice defects in the disclosure requirement¹⁰⁸ as often as they should. The prevalence of this failure suggests that there may be an unconscious aspect to it whereby an examiner’s technical priors may be routinely filling in the gaps in a vague or overbroad claim, such that he fails to recognize potential indefiniteness or enablement issues. A claim written in thinly-veiled functional language intended to avoid the application of 35 U.S.C. §112(f) that is accompanied by a bare-bones disclosure may look overly broad and inchoate, especially to someone who is not steeped in the context of the invention or the relevant technical field. However, this same claim and disclosure may look more substantive and “fleshed out” to an examiner who is viewing it through the lens formed by synthesizing the *ex parte* arguments provided by the patent attorney regarding the invention, the examiner’s own familiarity with the technical field through his education, and the sheer quantity of prior art to which he has been exposed as part of his daily work activities. In essence, where others might see only a random assortment of dots, the examiner may discern a clear shape, in which the dots conform to some pattern in a context to which the examiner has been routinely exposed or immersed. And because patent examination is *ex parte*, there is no opposing party who could provide debiasing information that might challenge the examiner’s perception that a claim is clearer than it actually is. Consequently, where extra features have been unconsciously read in by the “expert” examiner in the course of examination—thereby making the claims appear narrower and/or adequately supported—the resulting claim (as issued) might be viewed as overly broad when later construed by others who do not share the examiner’s priors.

¹⁰⁷ See generally Mark A. Lemley, *Software Patents and the Return of Functional Claiming*, 2013 WIS. L. REV. 905 (2012) [hereinafter Lemley, *Functional Claiming*].

¹⁰⁸ 35 U.S.C. § 112.

2. Legal Background

Those who are familiar with the “best practices” and the linguistic mannerisms of patent attorneys in claiming inventions are likely to interpret claims differently from those who do not possess this specialized knowledge.¹⁰⁹ For example, what an inventor and his patent attorney see when reading the same claim is likely to be different: the inventor, who is usually a lay person, might discern only a specific embodiment without appreciating the fact that the claim might have been written at a more abstract level to encompass additional embodiments and potential variations.¹¹⁰ Indeed, it is not uncommon for an inventor to have difficulty figuring out what the claims cover in his own patent.¹¹¹

More generally, a reader who has legal training—and for whom exegesis is a fundamental, acquired skill—may be more inclined to parse claim language than a lay reader.¹¹² Lawyers are trained to closely evaluate the meaning of individual words and are acquainted with the basic rules of statutory construction and contract interpretation. They are also socialized to look for errors in a body of text.¹¹³ As such, an individual with legal training may be unconsciously prone to engaging in some form of parsing

¹⁰⁹ See Golden, *supra* note 13, at 336-40 (describing specialized, legalistic nature of claim construction).

¹¹⁰ See George F. Wheeler, *Creative Claim Drafting: Claim Drafting Strategies, Specification Preparation, and Prosecution Tactics*, 3 J. MARSHALL REV. INTELL. PROP. L. 34, 53 (2003) (“[T]ake pains to write the broadest available claims. Write many independent claims, each ideally having a different, single distinction over the closest prior art. Do not stop until you have the broadest available claims of all available types.”); Donald A. Streck, *Choosing the Right Patent Attorney for Today’s Technology*, INTELL. PROP. TODAY 24 (Mar., 1996) (“[T]he patent attorney’s challenge is to ‘help’ the inventor think of the alternate embodiments and improvements on their own. This can sometimes be very frustrating when you can see three other embodiments and the client inventor insists that there are no more.”).

¹¹¹ See, e.g., *When Patents Attack*, THIS AMERICAN LIFE (July 22, 2011) (reporting remarks from a computer programmer who says his own software patents are “mumbo jumbo that nobody understands and makes no sense from an engineering standpoint whatsoever”), at <http://www.npr.org/sections/money/2011/07/26/138576167/when-patents-attack>.

¹¹² In deciding that claim construction should be a question of law, the Supreme Court pointed to the jury’s lack of training in exegesis. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 388 (1996) (noting that the “construction of written instruments is one of those things that judges often do and are likely to do better than” those who are “unburdened by training in exegesis”).

¹¹³ See, e.g., Jeff Lipshaw, *A Lawyer Reads an Ad . . . Or Are Parsers People?*, PRAWFSBLAWG (Sept. 21, 2016), at <http://prawfsblawg.blogs.com/prawfsblawg/2016/09/a-lawyer-reads-an-ad-or-are-parsers-people-1.html>.

when reading a claim. The extent and quality of the parsing may be a further variable as it could depend on an individual's specific training and experience in patent law, along with situational considerations.¹¹⁴

In contrast, for a lay reader, parsing may not typically inform the unconscious processes that influence claim interpretation, such that the description of the preferred embodiments in the specification is likely to serve as the primary—if not exclusive—point of reference when ascertaining claim scope. For readers who engage in minimal parsing or none at all, it is possible that a claim may simply act as a skeleton on which the disclosed embodiments are draped.

3. Personal Attitudes

A reader's priors may give rise to personal attitudes and opinions (e.g., toward the subject matter, the parties, the circumstances) that may influence how the reader construes a claim. And where likes and dislikes are involved, System 2 can act as “an apologist for the emotions of System 1” rather than a moderator, and seek information and arguments in support thereof.¹¹⁵

As Judge Alex Kozinski has acknowledged, judges have “biases, interests, leanings, instincts” and they need to fight the impulse to “take sides in a case and subtly shade the decision-making process.”¹¹⁶ A notable illustration of the impact of personal attitudes is provided in a study that reveals how the Federal Circuit judges' level of familiarity (or affinity) with the district judge whose claim construction is under review may influence whether the district court's claim construction is affirmed.¹¹⁷ Mark Lemley and Shawn Miller found that for district judges who sat by designation at the Federal Circuit, their reversal rates on subsequent claim construction appeals decreased by 50%.¹¹⁸

Personal attitudes may also be shaped by a reader's experiences. A notable illustration is provided in a study by Mark Lemley, Su Li, and Jennifer Urban, whose data reveal that district judges who are highly experienced with patent cases tend to rule against the patentee on infringement issues by a statistically significant margin compared to judges

¹¹⁴ See *infra* Part II.D.

¹¹⁵ KAHNEMAN, *supra* note 67, at 103-04.

¹¹⁶ Alex Kozinski, *What I Ate for Breakfast and Other Mysteries of Judicial Decision Making*, 26 LOY. L.A. L. REV. 993, 997 (1993)

¹¹⁷ See Mark A. Lemley and Shawn P. Miller, *If You Can't Beat 'Em, Join 'Em? How Sitting by Designation Affects Judicial Behavior*, 94 TEXAS L. REV. 451 (2016).

¹¹⁸ *Id.* at 451.

with less patent case experience.¹¹⁹ Based on these results, Lemley et al. surmise that judges who are experienced with patent cases may be more skeptical of broad claims.¹²⁰ Surprisingly, Lemley et al.'s result also largely holds for the district judges of the Eastern District of Texas,¹²¹ despite their alleged "forum selling" behavior in which they try to attract patent cases to their district by adopting procedures favorable to patentees¹²² (such as granting summary judgments of noninfringement at a lower rate than other districts).¹²³

Claim interpretation may also be affected by the individual philosophies and attitudes of a judge¹²⁴ on topics such as: the proper role of the specification in claim construction (proceduralist vs. holistic),¹²⁵ the degree of deference to be accorded to trial courts,¹²⁶ and the extent to which patent rights are properly balanced in relation to the public interest.¹²⁷ For example, wide-spread complaints and negative public opinion about patent assertion entities, particularly in the high-technology industries, may be affecting the Federal Circuit's assessment of the proper claim scope in certain cases¹²⁸: According to a study by Christopher Cotropia that looked at cases from 2010-2013, claim constructions that resulted in patentee wins at the district court were disproportionately likely to be overturned on appeal if the patent related to electronics, information technology, and business

¹¹⁹ Mark A. Lemley, Su Li, and Jennifer M. Urban, *Does Familiarity Breed Contempt among Judges Deciding Patent Cases?*, 66 STAN. L. REV. 1121, 1121, 1140-42 (2014) [hereinafter Lemley et al., *Contempt*].

¹²⁰ *Id.* at 1151.

¹²¹ *Id.* at 1154.

¹²² Daniel Klerman & Greg Reilly, *Forum Selling*, 89 S. CAL. L. REV. 241, 241 (2016); see also J. Jonas Anderson, *Court Competition for Patent Cases*, 163 U. PA. L. REV. 631, 635-36 (2015).

¹²³ Klerman & Reilly, *supra* note 122, at 253-54. By way of comparison, accused infringers won 45% of their motions for summary judgment of noninfringement in the Eastern District of Texas, whereas they won 57% of such motions nationally. John R. Allison, Mark A. Lemley & David L. Schwartz, *Understanding the Realities of Modern Patent Litigation*, 92 TEX. L. REV. 1769, 1793-94, tbls. 3A & 3B (2014). This figure also includes stipulated judgments of noninfringement. *Id.*

¹²⁴ See Thomas W. Krause & Heather F. Auyang, *What Close Cases and Reversals Reveal About Claim Construction at the Federal Circuit*, 12 J. MARSHALL REV. INTELL. PROP. L. 583, 584 (2013) (noting that in close cases, preferences or tendencies of Federal Circuit judges may be revealed).

¹²⁵ Wagner & Petherbridge, *Federal Circuit Succeeding*, *supra* note 21, at 1111 n.19 & 1138, tbl.1.; see also Krause & Auyang, *supra* note 124, at 594-95.

¹²⁶ Krause & Auyang, *supra* note 124, at 596-97.

¹²⁷ *Cf. id.* at 596.

¹²⁸ *Cf.* Lee Epstein & Andrew D. Martin, *Does Public Opinion Influence the Supreme Court? Possibly Yes (but We're Not Sure Why)*, 13 U. PA. J. CONST. L. 263, 265-67 (2010) (summarizing literature on multivariate studies on the effect of public opinion on Supreme Court decisions).

methods.¹²⁹

It is possible that the impact of individual judicial philosophies and preferences on claim scope might be more pronounced at the Federal Circuit than either at the PTO or at the district court level because the readers in those subordinate tribunals operate under a greater likelihood of having their constructions reviewed by a superior tribunal and potentially overruled, as claim construction is question of law that is reviewed de novo.¹³⁰ In contrast, for Federal Circuit judges, the likelihood of review by a superior tribunal (i.e., the U.S. Supreme Court) is relatively low.

C. Situational Considerations

A reader's interpretation of a claim may also be affected by his environment. This is termed "situationism," which is a "strain of social psychology that suggests that human behavior is commonly the product of the situations in which people find themselves, more so than their own underlying personalities."¹³¹ Resource constraints (such as time and money), the consequences of failure, whether the decisionmaker is an individual or a group, and other environmental characteristics—including factors extraneous to the task at hand, such as the timing of food breaks¹³²—could all potentially impact the analysis of claim language by making the reader more (or less) susceptible to cognitive biases by weakening (or strengthening) the ability of System 2 to monitor System 1's conclusions.¹³³ More generally, situational considerations may give rise to

¹²⁹ Christopher A. Cotropia, *Is Patent Claim Interpretation Review Deference or Correction Driven?*, 2014 B.Y.U. L. Rev. 1096, 1114-15 (2015) [hereinafter Cotropia, *Deference*].

¹³⁰ Although claim construction, as a question of law, is reviewed de novo, any subsidiary fact-finding by the district court is reviewed for clear error. *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 836-39 (2015).

¹³¹ Jeffrey J. Rachlinski, *The Psychological Foundations of Behavioral Law and Economics*, 2011 U. ILL. L. REV. 1675, 1690 (2011); see generally LEE ROSS & RICHARD E. NISBETT, *THE PERSON AND THE SITUATION* (1991) (synthesizing research on situational determinants of human behavior).

¹³² One study suggests that judges' decisions are affected by the time of day and whether they have had a food break. Shai Danziger, Jonathan Levav & Liora Avnaim-Pesso, *Extraneous Factors in Judicial Decisions*, 108 PROC. NAT'L ACAD. SCI. 6889, 6890 (2011) (presenting data showing that "the likelihood of a ruling in favor of a prisoner spikes at the beginning of each session—the probability of a favorable ruling steadily declines from ≈0.65 to nearly zero and jumps back up to ≈0.65 after a break for a meal").

¹³³ See KAHNEMAN, *supra* note 67, at 41-44 (describing impact of ego depletion on System 2); *id.* at 99 (discussing how "a lazy System 2" adopts the answer provided by System 1).

satisficing (as opposed to optimizing) behavior¹³⁴ in arriving at a claim construction: A reader may well decide that his or her interpretation of a claim is “good enough” in light of competing priorities.

1. Docket Pressures

Claim interpretation might be influenced by a reader’s workload in a couple of ways. *First*, the quality of parsing may be affected: A time-pressed reader who manages a heavy docket might be prone to relying on heuristics instead of undertaking the cognitively-intensive, deliberative act of parsing. *Second*, if a certain interpretation is likely to lighten a reader’s workload by either simplifying the analysis or hastening the resolution of a matter, whereas an alternative interpretation would complicate or prolong it, the reader might find the arguments supporting the former more compelling—at an unconscious level—than the arguments supporting the latter.

For examiners, docket pressures might prompt them to unconsciously favor narrower interpretations. In particular, an examiner’s workload may provide him inadequate time for parsing, and may also render allowance (as opposed to rejection) of a set of claims an attractive option for disposing of an application. As discussed previously, through a combination of heuristics and priors, examiners may not be fully parsing claims as BRI requires, and instead may be relying on a cognitive shortcut whereby the scope of a claim is stereotypically represented by a preferred embodiment.¹³⁵ That is, an examiner may be allowing an initial answer generated by the heuristics of System 1 to remain unexamined (and uncorrected) by the deliberative processes of System 2. This may cause them to perceive claims as narrower than the full scope derived by applying BRI, thereby increasing the likelihood that a claim would not be covered by the prior art or otherwise be deemed invalid (e.g., for lack of enablement). The docket management pressures¹³⁶ on an examiner are likely to yield greater reliance on the narrower, heuristic-generated answers because a high-volume application processing operation may leave an examiner little time¹³⁷ to fully parse the

¹³⁴ See Herbert A. Simon, *Rational Choice and the Structure of the Environment*, 63 PSYCHOL. REV. 129, 129 (1956).

¹³⁵ See *supra* Parts II.B and II.C.

¹³⁶ See Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1496 n.3 (2001) [Lemley, *Rational Ignorance*] (“[T]here are strong structural and psychological pressures on examiners to issue patents rather than reject applications . . .”).

¹³⁷ See *id.* at 1496 n.3 (“Examiners have astonishingly little time to spend on each application—on average, a total of eighteen hours . . .”); Michael Frakes & Melissa F. Wasserman, *Is the Time Allocated to Review Patent Applications Inducing Examiners to*

claims and consider the full range of possibilities beyond the disclosed embodiments, which is a deliberative process that imposes a high cognitive load.¹³⁸ Moreover, a narrow reading of the claim may be unconsciously appealing to an examiner because it would render a claim patentable, thereby advancing the prosecution of the application to its conclusion and disposal.¹³⁹ In contrast, a broad interpretation could prolong the proceedings because the likelihood of an unpatentability determination would increase, which may lead to the filing of a Request for Continued Examination, a continuation application, or a PTAB appeal.

Similar considerations may affect the manner in which district judges construe claims, but to a different degree. Like a patent examiner, a district judge manages a heavy docket of cases.¹⁴⁰ However, unlike a patent examiner, a district judge is provided with adversarial briefing, which can ease the cognitive burden of exploring interpretive possibilities under the current claim construction regime that may require claim scope to extend substantially beyond the preferred embodiments. Thus, to the extent that a heavy docket may adversely affect a reader's proclivity to engage in System 2 deliberation, it may have a much stronger impact on an examiner than on a district judge. The primary manner in which a heavy docket, in and of itself, might influence a district judge's claim interpretation could, instead, be in the selection of an interpretation that would substantially streamline the case or hasten its termination. For example, if a narrow interpretation could support a noninfringement ruling that would dispose of multiple

Grant Invalid Patents?: Evidence from Micro-Level Application Data, REV. ECON. & STAT. (forthcoming) (manuscript at 10 tbl.1) (Oct. 28, 2015), <http://ssrn.com/abstract=2467262>.

¹³⁸ Several empirical studies suggest that examiners avoid time-consuming work in a manner that impacts patent quality. See Frakes & Wasserman, *supra* note 137, at 41 (“Our analysis finds that as examiners are given less time to review applications upon certain types of promotions, the less prior art they cite, the less likely they are to make time-consuming obviousness rejections, and the more likely they are to grant patents.”); Christopher A. Cotropia, Mark A. Lemley & Bhaven Sampat, *Do Applicant Patent Citations Matter?*, 42 RES. POL’Y 844, 851 (2013) (reporting results suggesting that an examiner is more likely to rely exclusively on his own search results without substantively considering the prior art submissions of the applicant).

¹³⁹ See Lemley, *Rational Ignorance*, *supra* note 136, at 1496 n.3 (“[T]he only way for an examiner to guarantee that an application is finally disposed of is to issue a patent. Examiners who want credit for dispositions therefore have a strong incentive to issue patents to persistent applicants, rather than to continue rejecting the applications.”).

¹⁴⁰ According to one estimate, the average number of new incoming cases per district judge was 388 during a 12-month period from July 1, 2013 to June 30, 2014. TRANSACTIONAL RECORDS ACCESS CLEARINGHOUSE (TRAC) AT SYRACUSE UNIVERSITY, *As Workloads Rise in Federal Courts, Judge Counts Remain Flat* (Oct. 14, 2014), at <http://trac.syr.edu/tracreports/judge/364/>.

claims or even the entire case via summary judgment or settlement,¹⁴¹ a district judge might find, unconsciously, the arguments in favor of a narrow interpretation more compelling than the arguments in favor of a broad one.

For PTAB judges, it is possible that the impact of docket pressure on claim construction might be the most salient *before* the institution of a post-grant proceeding, such as inter partes review. The PTAB has deadlines set by statute for completing post-grant proceedings under the AIA.¹⁴² As such, the PTAB judges may have an interest in keeping the number of proceedings manageable in order to be able to meet those deadlines. Given that the decision to institute an AIA proceeding is unappealable,¹⁴³ denying petitions for review may provide the PTAB judges an effective mechanism for directly managing their workload.¹⁴⁴ For example, a PTAB panel could avoid instituting an inter partes review (and the resulting follow-on work)¹⁴⁵ by finding there is no “reasonable likelihood” that the petitioner would prevail as to any of the challenged claims,¹⁴⁶ based on a narrow reading of the claims that avoids invalidity. This possibility—that the PTAB judges may be unconsciously reading the claims narrowly to make it less likely that a claim would be found invalid in order to deny petitions so as to control their workload—might be one of the factors contributing to the progressive decrease in the institution rate for post-grant proceedings,¹⁴⁷

¹⁴¹ See Allison et al., *supra* note 123, at 1789-90 (explaining how it is easier for a court to dispose of a case through a summary judgment ruling in favor of the defendant rather than one in favor of the patentee). Although a patentee might seek a narrow interpretation to avoid prior art, it is far more likely that the party advocating a narrow construction is the accused infringer who is seeking to prove noninfringement, which, compared to invalidity, is less burdensome for an accused infringer to prove: noninfringement may be proven by showing the absence of a single element by a preponderance, rather than showing that every element is present in the prior art to invalidate a claim by clear and convincing evidence. *See id.*

¹⁴² 35 U.S.C. § 316(a)(11) (specifying that “the final determination in an inter partes review be issued not later than 1 year after the date on which the Director notices the institution of a review . . . except that the Director may, for good cause shown, extend the 1-year period by not more than 6 months”).

¹⁴³ 35 U.S.C. § 314(d) (“The determination by the Director whether to institute an inter partes review under this section shall be final and nonappealable.”).

¹⁴⁴ Perkins Coie, *Inter Partes Review Proceedings: A Fourth Anniversary Report* 8 (Oct. 2016), at https://issuu.com/perkinscoie/docs/ipr_anniversary_report_4_final [hereinafter *Perkins Coie Report*] (“One possible explanation for this decrease in institution rate is the overwhelming popularity of IPRs. A lower rate of institution allows the PTAB to control its workload to meet the 18-month statutory deadline for issuance of final written decisions.”).

¹⁴⁵ At the PTAB, the same panel of judges who handle the institution decision also preside over the proceeding after institution.

¹⁴⁶ 35 U.S.C. § 314(a).

¹⁴⁷ See Tony Dutra, *Patent Owners PTAB Success Rates Up, More Petitions Denied*, 92 PAT. TRADEMARK & COPYRIGHT J. 860 (June 28, 2016) (“Data from Bloomberg BNA[]

apart from other reasons such as pre-institution settlements and the quality of petitions.¹⁴⁸ Once an inter partes review has been instituted, it is possible that the *opposite* directional bias might affect the PTAB panel's claim construction: Instead of an unconscious preference toward a narrow interpretation (as in the pre-institution stage), confirmation bias may influence the *post*-institution claim interpretation such that the panel might favor a broad interpretation that would support a finding of invalidity—thereby confirming the panel's decision to institute the proceeding.¹⁴⁹

Unlike the proceedings at the district court or at the PTAB, the directionality of claim interpretation (i.e., broad versus narrow) might not have a substantial or predictable effect on the Federal Circuit's workload, given that most appeals are, by comparison, relatively compact proceedings involving only a single round of briefing and oral argument followed by a disposition.¹⁵⁰ To the extent that claim construction could meaningfully impact the Federal Circuit's workload, it may arise from its *disposition* rather than its directionality; that is, whether the claim construction under review is being affirmed or not. Affirmances may borrow the reasoning of the decision under review or, in some cases, may be decided summarily without opinion.¹⁵¹ In contrast, reversals or any modifications of the judgment below may require more work. It is possible then, that a Federal Circuit panel's interpretation of a claim could be influenced by the panel members' desire to alleviate their workload through affirmance: the judges who feel their workload is unusually heavy might find, unconsciously, the arguments in favor of affirmance to be more convincing. Indeed, the rate of summary affirmances without opinion (also known as "Rule 36 judgments")¹⁵² has been increasing, particularly in light of the dramatic increase in the number of appeals from the PTAB.¹⁵³

However, it is not clear whether a claim construction that has been modified—or is otherwise the product of intense deliberative reasoning by a panel of Federal Circuit judges as set forth in a written opinion—is

. . . through May 31, 2016, show the board denied inter partes review (IPR) petitions . . . at a rate of about 34 percent in the most recent year, and 29 percent in the preceding year. That compares to about 18 percent in the PTAB's early days.").

¹⁴⁸ See, e.g., *Perkins Coie Report*, *supra* note 144, at 8-9.

¹⁴⁹ See *supra* note 98 and accompanying text.

¹⁵⁰ A case may return to the Federal Circuit after an appeal from a remand, see, e.g., *Liebel-Flarsheim Co. v. Medrad, Inc.*, 481 F.3d 1371, 1373 (Fed. Cir. 2007), but such cases are infrequent.

¹⁵¹ See Fed. Cir. R. 36.

¹⁵² Rule 36 judgments are non-precedential. U.S. COURT OF APPEALS FOR THE FEDERAL CIRCUIT, *Internal Operating Procedures*, IOP #9, ¶8 (Nov. 14, 2008), at <http://www.cafc.uscourts.gov/sites/default/files/rules-of-practice/IOPs/IOPsMaster1a.pdf>.

¹⁵³ See Jason Rantanen, *Data on Federal Circuit Appeals and Decisions*, PATENTLY-O, June 2, 2016, <http://patentlyo.com/patent/2016/06/circuit-appeals-decisions.html>.

necessarily more reliable than a construction that has been summarily affirmed without opinion. Ostensibly, the Federal Circuit judges have the lightest docket pressure among the three types of judicial readers discussed thus far, as they do not have heavy individual loads like district judges and are not subject to statutorily-set deadlines for dispositions like PTAB judges. This, along with their extensive experience with patent-specific exegesis, might place Federal Circuit judges in the best position to undertake the cognitively-intensive, deliberative process to parse a claim in a manner that explores the full range of interpretive options. However, when Federal Circuit judges engage in deliberative reasoning—thereby resisting reliance on the quick answers provided by System 1—other behavioral elements, such as their priors,¹⁵⁴ may still affect the outcome when they are ratified and rationalized via System 2, as suggested by the phenomenon of panel dependence.

2. Stakes and Consequences

It is possible that the need for a hypervigilant System 2 is lessened when the stakes are low. For examiners, taking cognitive shortcuts—which can yield artificially narrow claim scope¹⁵⁵—is relatively low-cost and low-risk because an error associated with an individual patent (let alone an individual claim) is unlikely to materially affect their work or status at the PTO. Given the application backlog, examiners are evaluated primarily on their docket management skills.¹⁵⁶ For an examiner, the consequences associated with missing productivity goals are likely to be more salient and immediate than being wrong on claim scope for any given application.¹⁵⁷ The consequences of allowing defective claims to issue may not be imminent because of organizational difficulties associated with reliably enforcing quality control at the PTO.¹⁵⁸ More generally, the likelihood that an error in claim scope will be discovered is extremely low, given that relatively few issued patents are carefully read, let alone asserted and tested in court. In short, the stakes may not be high enough for an examiner to

¹⁵⁴ See *supra* Part II.C.3.

¹⁵⁵ See *supra* Parts II.B. and II.C.

¹⁵⁶ See U.S. DEPT. OF COMMERCE, OFFICE OF INSPECTOR GENERAL, USPTO NEEDS TO STRENGTHEN PATENT QUALITY ASSURANCE PRACTICES, FINAL REPORT NO. OIG-15-026-A at 4-8 (Apr. 10, 2015), <https://www.oig.doc.gov/OIGPublications/OIG-15-026-A.pdf>.

¹⁵⁷ For example, in fiscal years 2011 through 2013, the PTO issued written warnings on docket-related issues to hundreds of examiners, while issuing written warnings on quality issues to only seven examiners. *Id.* at 8.

¹⁵⁸ See *id.* at 6 (suggesting that supervisors may be reluctant to undertake the time- and labor-intensive process associated with formally charging errors based on quality issues).

undertake the effort to thoroughly parse claim language under BRI.

By comparison, PTAB judges do not process a high volume of low-stakes patents for which errors are unlikely to be noticed. Rather, every patent the PTAB judges handle is one that has been (or has a high likelihood of being) litigated, and a substantial likelihood of appeal exists. As a result, PTAB judges may unconsciously commit more cognitive resources than an examiner to closely parsing claim language to figure out the full extent of what would be deemed the “broadest reasonable construction” of a claim.

Likewise, litigation counsel, district judges, and Federal Circuit judges may unconsciously commit more cognitive resources than examiners to parse claims because they do not operate in a low-stakes, high-volume proceeding like patent prosecution where cognitive shortcuts can be readily taken with few consequences. Instead, these readers operate in high-stakes, adversarial proceedings whereby their reputations may be affected by their performance—to varying degrees. For example, district judges, according to Jeffrey Lefstin, may be more “personally accountable for their judgments” than Federal Circuit judges, as the former directly bear the impact of their decisions on case management issues and cannot hide behind a panel.¹⁵⁹ Compared to district judges and PTAB judges, Federal Circuit judges are extremely unlikely to have their claim constructions reviewed by a superior tribunal (which, for the Federal Circuit, would be the United States Supreme Court).¹⁶⁰ This might allow the individual philosophies of each panel member, as well as the interpersonal dynamics within the panel, to play a larger role in influencing the construction, as evidenced by, for example, the doctrinal schism between the proceduralists and the holistics, and the resulting panel dependence in claim construction dispositions at the Federal Circuit.¹⁶¹

3. Group Deliberation

Group deliberation may have the effect, in some cases, of debiasing or mitigating the effects of cognitive biases. The impact of the heuristics and priors discussed in previous sections may be the most salient when viewed

¹⁵⁹ Lefstin, *Interpretive Regimes*, *supra* note 31, at 1057.

¹⁶⁰ See SUPREME COURT OF THE UNITED STATES, *The Justices' Caseload* at <http://www.supremecourt.gov/about/justicecaseload.aspx> (“Each Term, approximately 7,000-8,000 new cases are filed in the Supreme Court. . . . Plenary review, with oral arguments by attorneys, is currently granted in about 80 of those cases each Term, and the Court typically disposes of about 100 or more cases without plenary review.”) (last visited Sept. 25, 2016).

¹⁶¹ See *supra* notes 21-22 and accompanying text.

with respect to the decisions of one individual. The decision of a group, by contrast, might reflect a melding of interpretations or the selection of a consensus choice among multiple different options, as the author of an opinion has to make a conscious effort to win over at least one another judge on a three-judge panel. This may mute the influence of certain individual personal characteristics: According to an empirical study by Kimberly Moore, an individual Federal Circuit judge's technical background, prior patent-related experience, or political affiliation (as measured by the party of the appointing president) has no statistically significant relationship with the likelihood that a claim construction decision would be affirmed or reversed.¹⁶²

By way of example, PTAB judges reach decisions as a panel with three members. Compared to the work of an individual patent examiner, the act of collective deliberation by a PTAB panel may help mitigate the influence of their individual priors, as well as distribute the cognitive load of parsing text. As such, when the authoring judge of a PTAB opinion interprets a claim under BRI, he or she may be less likely than an examiner to adopt the "easy" answer suggested by his or her cognitive biases by virtue of the fact that a single judge cannot make a decision alone, and must convince at least one other judge through arguments that require deliberative reasoning under System 2. Because the PTAB judges are more likely to engage in a deliberative analysis of claim scope under BRI, their assessment of scope is likely to be broader—thereby rendering the claim more susceptible to invalidation—than that of an examiner. In this manner, the relative influence of an individual's cognitive biases on claim interpretation is likely to be attenuated in a PTAB panel decision when compared to an office action prepared by an individual examiner.

Although group deliberation might mitigate some behavioral elements, it may amplify others. For example, when particular attitudes are shared by several members of a group, it may be reinforced. A study by Cass Sunstein, David Schkade, and Lisa Michelle Ellman reveals that group deliberation can result in more extreme results through an amplification effect based on panel composition: Panels staffed by appointees of a single political party were found to rule in ways that were more extreme than if the panel composition were mixed.¹⁶³ Group deliberation also introduces group dynamics, whereby the group's desire to maintain collegiality and each individual's desire to minimize work may influence the ultimate

¹⁶² Moore, *supra* note 16, at 26-27.

¹⁶³ Cass R. Sunstein, David Schkade & Lisa Michelle Ellman, *Ideological Voting on Federal Courts of Appeals: A Preliminary Investigation*, 90 VA. L. REV. 301, 304-05 (2004).

construction adopted.¹⁶⁴ Indeed, a judge who is sitting with other judges on a panel may go along with a suboptimal construction because it entails less work than dissenting or attempting to change the authoring judge's mind.¹⁶⁵

At the Federal Circuit, panel dependence is a well-known phenomenon that affects claim construction issues based on the existence of two distinct camps of judges: the proceduralists and the holistics.¹⁶⁶ Although the individual backgrounds of Federal Circuit judges may not appreciably affect how they may construe claims during group deliberations,¹⁶⁷ it appears as if the extent to which the judges on a panel share case-related judicial philosophies, attitudes, and preferences¹⁶⁸ may influence the outcome. Like the Federal Circuit judges, the PTAB judges who deliberate as a panel may also experience similar group-specific behavioral artifacts that may affect their claim interpretations. However, the extent to which such artifacts may create panel-dependence at the PTAB might be tempered by the likelihood of review by a superior tribunal, which is greater for the PTAB judges than for the Federal Circuit judges.

In short, to the extent that debiasing can occur in panels of judges, it is imperfect. In addition, the final result may still be highly variable because the parsing is performed not by one person but rather by three who, in the aggregate, can conceive of a greater number of possible interpretations—from which the selection of the group's preferred interpretation may be influenced by not only the behavioral elements of each individual panel member, but also group-specific behavioral artifacts.

D. Reader Comparison

For each type of reader, it is likely that a *combination* of behavioral elements may affect how she interprets a claim. The influence of one behavioral element may not necessarily point in the same direction as another with respect to claim scope: some behavioral elements may push the reader toward a narrow interpretation, while others may push for a broader one. For example, a patent litigation attorney with an extensive technical background who is representing the patentee may endeavor to read

¹⁶⁴ Cf. Bock, *Restructuring*, *supra* note 96, at 222-25.

¹⁶⁵ Cf. Richard A. Posner, *What Do Judges and Justices Maximize? (The Same Thing Everybody Else Does)*, 3 SUP. CT. ECON. REV. 1, 20-21 (1993) (discussing “going along” voting and “live and let live” opinion-joining).

¹⁶⁶ See *supra* notes 21-22 and accompanying text.

¹⁶⁷ Moore, *supra* note 16, at 26-27

¹⁶⁸ See *supra* Part II.B.3.

the claims as broadly as possible and may unconsciously discount strong arguments to the contrary, but, at the same time, she may have a tendency to unconsciously fill in extra technical details (based on her technical priors) when reading the claim that might lead her to a slightly narrower interpretation than that reached by a colleague on her team who has no technical background. In addition, the extent to which a reader may rely on the heuristics of System 1, or find certain arguments unconsciously compelling, may depend not only on his priors but also on the circumstances (i.e., the situational characteristics) under which he is reading the claim.

Table 1 lists several different categories of readers and compares them across several major personal and situational characteristics that may affect their behavioral elements, which, in turn, may influence how they construe claims. The “others” represent other readers who may be anyone—from a lay member of the public to retired PTO commissioners who serve as mediators for patent suits.

The list of characteristics in Table 1 is not exhaustive. A comparison of multiple readers who are operating under the same claim construction rules reveals that no two reader types share the same characteristics. For example, the *Phillips* methodology is applied by litigators, district judges, and Federal Circuit judges—all of whom have different combinations of characteristics that may influence how their behavioral elements may affect their view of claim scope. The same observation may be made for the readers who apply BRI (i.e., patent attorneys, examiners, litigators in PTO proceedings, PTAB judges, and Federal Circuit judges in PTO appeals). Further heterogeneity may exist within each reader type, where variance in the skill levels of individuals may affect the extent and quality of their parsing.

Table 1: Comparison of Reader Characteristics

	Inventor	Pat. Atty	PTO Ex'r	Litigator	DCT Judge	PTAB Judge	CAFC Judge	Others
Rules of Claim Interpretation	N/A	BRI	BRI	<i>Phillips</i> / BRI	<i>Phillips</i>	BRI	<i>Phillips</i> / BRI	?
Knowledge re: Invention & Inventor Intent	Highest	High	Low	Medium	Low	Low	Very Low	?
Technical Background	Yes	Yes	Yes	Varies	Unlikely	Yes	Varies	?
Legal Background	Unlikely	Varies	Varies	Yes	Yes	Yes	Yes	?
Represent a Side	Yes	Yes	No	Yes	No	No	No	?
Adversarial Proceeding	N/A	No	No	Yes	Yes	Yes	Yes	?
High-Volume Docket for Individual	N/A	Yes	Yes	No	Yes	No	No	?
Group Deliberation	N/A	N/A	N/A	N/A	N/A	Yes	Yes	?
Overruled on Appeal	N/A	N/A	Possible	N/A	Possible	Possible	Highly Unlikely	?

III. TOWARD READER-INVARIANT CLAIM CONSTRUCTION

A. *The Need for a New Claim Construction Regime*

The existence of cognitive biases, along with the situational considerations that make it expedient to rely on them, may not necessarily yield a biased claim interpretation unless the interpretation regime is susceptible to allowing them to affect the outcome. The current claim construction canons allow a considerable degree of interpretive leeway and discretion, such that opportunities arise for behavioral influences to be introduced, or, at the very least, make it difficult to guard against them. If the claim interpretation process were limited to applying a simple bright-line rule that does not require any parsing of words or the exercise of judgment, then the influence of behavioral elements on interpretation may be minimal. However, the *Phillips* methodology and BRI both require parsing claim language through the exercise of judgment in the selection and application of interpretive standards and sources to draw clear

boundaries in an abstract, open-ended universe. Analyzing the possible “plain and ordinary meaning” of a claim term while striking the correct balance between reading in light of, but not reading in limitations from, the specification is cognitively intensive—and different readers may commit different levels of cognitive resources to this inquiry. As such, the combination of loose standards,¹⁶⁹ behavioral elements, and different readers may yield considerable reader variance in scope determinations.

The wide variation in scope that is achievable under the *Phillips* methodology and BRI makes error correction difficult because a reader’s deliberative System 2 process may not be able to reliably determine when a cognitive-bias-inflected answer provided by the unconscious process of System 1 requires modification or correction—if the System 1 answer itself is justifiable or plausible under the *Phillips* methodology or BRI. For example, if an examiner has unconsciously imported limitations from the preferred embodiment into his analysis of claim scope, he might be able to later explain it away as an instance of reading the claim in light of the specification. Likewise, an overly broad interpretation of a claim that is completely unmoored from what was invented might be justified by the patentee’s litigation counsel as the “plain and ordinary” meaning that does not impermissibly read in limitations from the specification.

While it is impossible to completely eliminate reader-dependence, it might be mitigated through claim interpretation rules that are robust despite the influence of behavioral elements. The sheer variety of readers (e.g., lay people, technologists, business people, lawyers, judges) counsels in favor of adopting claim construction canons that are robust in the sense that a lay reader’s determination of claim scope and that of a Federal Circuit judge should substantially coincide, with any differences falling within a narrow range. Patents have many audiences, but the current rules are designed for a very narrow set of readers—attorneys and judges—through the emphasis on exegesis. But even Federal Circuit judges, who are, ostensibly, in the best position to fully engage in the parsing required under the current claim interpretation regime, are unable to avoid the influence of behavioral elements that underlie reader-to-reader variance.¹⁷⁰

The reader dependence problem appears to be enabled largely by the heavy emphasis on parsing individual words and short phrases under the current claim construction regime.¹⁷¹ As mentioned previously, the act of

¹⁶⁹ Or “loose canons.”

¹⁷⁰ See *supra* Part II.

¹⁷¹ See Mark A. Lemley & Mark P. McKenna, *Scope*, 57 WM. & MARY L. REV. 2197, 2270 (2016) (“*Markman* hearings focus on the words of the claims written by patent lawyers to try to define the invention rather than on the invention itself. . . . dividing—rather than unifying—the analysis of a patent claim, focusing on short phrases and

parsing allows behavioral elements to influence claim construction as it requires the exercise of judgment in selecting and applying conflicting interpretive canons and an open universe of sources. In addition, commentators have observed that the undue focus on the words of the claim (rather than the invention itself) has caused mischief by yielding overbroad constructions that may be unmoored to what was actually invented.¹⁷² What may be desirable, then, is an alternative claim construction regime that allows most readers of any type to reliably estimate scope to a first order approximation with minimal parsing, and which also cabins the scope to some foreseeable realm of possibility based on the nature of the invention. To this end, both the interpretive rules as well as the available interpretive sources may need to be modified.

With respect to the rules of interpretation, those that require minimal parsing could help decrease interpretive variance. As discussed previously, for some readers, parsing comes naturally or is essential to their purpose for reading a patent.¹⁷³ However, determining whether their parsing is correct is difficult to ascertain reliably, as illustrated by the panel-dependent nature of the Federal Circuit's claim construction decisions. Other readers may dispense with parsing either because they are untrained in it, do not have time for it, or find it unnecessary because knowing the gist of the invention is adequate for their purposes. Of these two groups—the parsers and the non-parsers—it is likely that the vast majority of the potential readers of a patent fall into the latter category, as the former is essentially limited to attorneys and judges who are familiar with the *Phillips* methodology and/or BRI and who, unlike the patent examiners, work under circumstances where meaningful attempts at parsing cannot be avoided. This group of parsers is far outnumbered by the non-parsing engineers, scientists, business people, investors, and anyone else located worldwide who might be interested in reviewing a U.S. patent. In addition, the readers who are responsible for approving the claims that issue—the patent examiners—often fall into the non-parsing category. To minimize reader dependence, then, a claim interpretation methodology should be robust for all reader types, without regard to the ability to parse.

With respect to the sources of interpretation, they should be normalized or limited in order to mitigate the impact of behavioral elements in their selection and use. As discussed in the previous section, readers with

individual words rather than the claim as a whole.” (footnote omitted)).

¹⁷² *Id.* at 2270 (observing that “allowing words about inventions to become the focus rather than the inventions themselves has led to a variety of mischief, from making overclaiming easier to introducing ambiguities in the scope of the patent that have nothing to do with what the patentee actually invented”).

¹⁷³ *See supra* Part II.C.2.

differing degrees of expertise in a field may read in or discern additional limitations beyond the claim language (to varying degrees) so as to find patterns, fill in gaps, and organize abstract information into something meaningful.¹⁷⁴ In such circumstances, reader dependence may be mitigated by normalizing the amount of technical information that may be read in. One way of doing this would be to rely heavily on the specification, which is a source of information available to all readers of a patent claim.

B. Proposal: Means-Plus-Function Analysis for All Claims

Under the current state of patent law, one circumstance under which the interpretive source is normalized (specifically, to the disclosure) and the interpretive rule involves limited or minimal parsing is in the construction of mean-plus-function claims under 35 U.S.C. § 112(f).¹⁷⁵ To mitigate reader-dependence, this Article proposes interpreting *all* claims using means-plus-function analysis.

Currently, means-plus-function analysis is applied only to claims containing means-plus-function terms, which usually take the form of the word “means” followed by the recitation of a function, such as “means for fastening.” The Patent Act specifies that a means-plus-function claim¹⁷⁶ “shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.”¹⁷⁷ If the “corresponding structure, material, or acts” in support of the claimed function are not described in the specification, then the means-plus-function claim fails to satisfy the definiteness requirement.¹⁷⁸ The determination of the corresponding structure, material, or acts is deemed a matter of claim

¹⁷⁴ See *supra* Parts II.B and II.C.

¹⁷⁵ 35 U.S.C. § 112(f) provides that:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

Id.

¹⁷⁶ As noted by John Duffy, § 112(f) has a textual wrinkle whereby means-plus-function analysis actually applies to the entire *claim* rather than just the means-plus-function element. Duffy, *supra* note 6, at 1209-10.

¹⁷⁷ 35 U.S.C. § 112(f).

¹⁷⁸ In re Donaldson Co., 16 F.3d 1189, 1195 (Fed. Cir. 1994) (“[I]f one employs means-plus-function language in a claim, one must set forth in the specification an adequate disclosure showing what is meant by that language. [Otherwise], the applicant has . . . failed to particularly point out and distinctly claim the invention as required by the second paragraph of section 112.”).

construction,¹⁷⁹ and the sufficiency of the disclosure is ascertained from the point of view of PHOSITA.¹⁸⁰ Equivalent structures, materials, or acts must have been in existence at the time of patent issuance.¹⁸¹

Moving to an all-means-plus-function claim construction regime may substantially decrease but not completely eliminate the need for parsing, as there will be some incidental parsing involved in mapping the claim language to the content of the specification. However, the primary focus will no longer be on the claim language, but rather on the invention itself and the technical content of the disclosure. The amount of parsing involved in means-plus-function analysis is likely to impose a lower cognitive load—which may yield less variance—than either the *Phillips* methodology or BRI, both of which require a reader to articulate the abstract limits of the “plain meaning” of a claim term while balancing conflicting canons on the use of the specification as an interpretive source. In contrast to formulating the abstract boundaries of a claim term, it may be easier to determine whether that claim term has some corresponding example in the specification and to ascertain whether something is a variation on that example (i.e., an equivalent), as it involves a relatively defined, narrow universe of possibilities. By way of comparison, Figure 2 updates Figure 1 by adding the likely scope of a claim construed using means-plus-function analysis in relation to existing methodologies that require extensive parsing (and are susceptible to high levels of reader-to-reader variance as a result).

In general, the types of interpretive canons that would be the most resistant to behavioral elements are bright-line rules—the brighter the line, the greater the likelihood that it will be followed reliably. But a line that is too bright is problematic because it would reduce the scope of a claim to the exact embodiment disclosed in the specification, which substantially decreases the utility of a patent by allowing infringement through trivial variations. However, the current claim construction regime (consisting of the *Phillips* methodology and BRI) eschews bright lines to such an extent that it yields results that are highly susceptible to influence by behavioral elements. While the debate over claim construction methodologies could be viewed as a “rules vs. standards”¹⁸² issue, perhaps what is really needed is a

¹⁷⁹ *Atmel*, 198 F.3d at 1379.

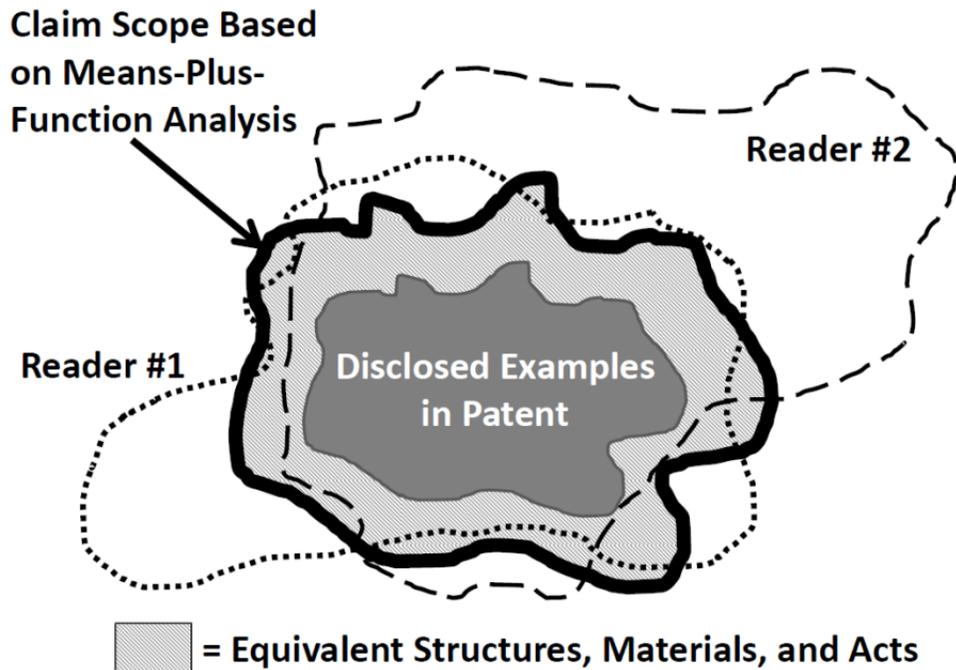
¹⁸⁰ *Id.*

¹⁸¹ *Al-Site Corp. v. VSI Int'l, Inc.*, 174 F.3d 1308, 1320 (Fed. Cir. 1999) (“[A] structural equivalent under § 112 must have been available at the time of the issuance of the claim. An equivalent structure or act under § 112 cannot embrace technology developed after the issuance of the patent because the literal meaning of a claim is fixed upon its issuance.” (citation omitted)).

¹⁸² *See, e.g.*, Daniel A. Crane, *Rules Versus Standards in Antitrust Litigation*, 64 WASH. & LEE L. REV. 49, 52-54 n.11 (2007) (cataloging extensive literature on the “rules versus standards” debate).

hybrid: a rule supplemented with a standard, whereby the rule sets a relatively concrete baseline and the standard provides limited room to deviate from that baseline. The rule portion is necessary to help accommodate or, as necessary, cabin the influence of behavioral elements, while the standards portion allows flexibility in setting claim scope beyond the literal disclosure using the rule as a reference point. We currently have such a hybrid rule in means-plus-function analysis: the “rule” is that the claim term must have corresponding structures disclosed in the specification, while the “standard” is the claim coverage over equivalents.

Figure 2: Figure 1 Updated with Claim Scope Using Means-Plus-Function Analysis



Notably, by extending means-plus-function analysis to all claims, we are effectively going back to central claiming¹⁸³ and focusing more closely

¹⁸³ Burk & Lemley, *Fence Posts*, *supra* note 2, at 1774 (“The legacy of central claiming also lives on in the practice of means-plus-function claiming.”); Fromer, *supra* note 24, at 738-39; *see also* Mark D. Janis, *Who’s Afraid of Functional Claims? Reforming the Patent Law’s § 112, ¶6 Jurisprudence*, 15 SANTA CLARA COMPUTER & HIGH TECH. L.J. 231, 291 (1999) (“[A] careful historical synthesis demonstrates that the disclosure-plus-

on what the inventor has actually invented. Existing commentary suggests that this would be a salutary development as central claiming may comport better with the unconscious mind than peripheral claiming.¹⁸⁴ One of the features of central claiming that makes it less cognitively burdensome is that it appears to work with the representativeness heuristic and stereotyping tendencies rather than against them.¹⁸⁵

A key benefit of a central claiming regime such as means-plus-function analysis is the focus on the specification. This is because the claim scope envisioned by a reader who has engaged in little to no parsing is likely to track the disclosed embodiments,¹⁸⁶ which is closer to what one would get under a central claiming regime than under the current peripheral claiming regime.¹⁸⁷ In other words, the close reliance on the specification to inform the meaning of a claim is more likely to yield a claim construction that corresponds to a non-parsing reader's estimate of claim scope as generated by the heuristics of System 1, which can be deemed the "cognitive default" answer. The "cognitive default" answer should be based on the perspective of non-parsers (e.g., engineers, business people, investors) because, in the population of potential patent readers, they far outnumber those who are capable of parsing (e.g., patent litigators and federal judges presiding over patent cases). If reader-to-reader variance is to be minimized, then a "cognitive default" that is likely shared by the vast majority of readers should be selected.

In general, an all-means-plus-function regime may help mitigate reader dependence as all claim interpretations would be required to hew closely to the content of the specification. This can help cabin the reader-to-reader variance that might have been shaped by behavioral elements, which could have otherwise led a reader to weigh heavily some other random interpretive source. Dramatically increasing the salience of the specification could thus mitigate the effect of differences in information sets among different readers.¹⁸⁸ Moreover, having the specification serve as the most salient interpretive source is appropriate because everyone who reads the claims has access to it, regardless of their circumstances or background knowledge.

equivalents scheme of § 112, ¶6 has links to the doctrine of equivalents as it was understood in the central claiming regime." (footnote omitted)). In addition, research by John Duffy suggests that means-plus-function analysis may also be a descendant of pre-Federal Circuit peripheral claiming. Duffy, *supra* note 6, at 1206.

¹⁸⁴ See, e.g., Fromer, *supra* note 24, at 763-67 (analyzing central claiming in light of cognitive science literature).

¹⁸⁵ See *supra* Part II.B.2.

¹⁸⁶ See *supra* Part II.A.2.

¹⁸⁷ See Fromer, *supra* note 24, at 776.

¹⁸⁸ See *supra* Part II.B.1.

Because it is not possible to eliminate cognitive biases, the proposed solution endeavors to mitigate reader-dependence by working *with* them to mitigate their effects. As discussed previously, readers who are time-pressed or resource-constrained, such as examiners, may be susceptible to relying on the heuristic-generated answer that equates claim scope with the disclosed embodiments because it is less cognitively-intensive to do so.¹⁸⁹ Similarly, readers who are incapable of parsing are likely to come up with the same heuristic-generated answer that tracks the embodiments.¹⁹⁰ Conveniently, this heuristic-generated answer (i.e., the “cognitive default”), corresponds to a first-order approximation of claim scope under a means-plus-function analysis. By imposing means-plus-function analysis for all claims, there may be less reader variation in assessing claim scope as it would force lay people and judges alike to moor their interpretation of a claim to the structures, materials, and acts described in the specification that correspond to each claim term—which is what the former does naturally, while cabining the latter’s tendency to parse.

The fact that this solution does not seek to eliminate behavioral elements (because it is impossible), and instead attempts to normalize their effects may seem counterintuitive because the Federal Circuit has endeavored to eliminate biases in claim construction through its many canons. But as the court itself has realized, some “biasing” is not only unavoidable but also necessary because claim construction—in order to be meaningful—needs to be performed with respect to some concrete frame of reference. A case in point is the Federal Circuit’s rule, set forth en banc shortly after its creation, that district judges should not construe the claims in relation to the accused product.¹⁹¹ This admonition was intended to reduce the risk of biasing the claim construction.¹⁹² But when the Federal Circuit itself was faced with the very situation it had envisioned for district court claim construction—i.e., it could not consider the accused product in its analysis because no description of the accused device existed in the appellate record (as the appeal was from a stipulated judgment)¹⁹³—the Federal Circuit acknowledged that, without the context provided by a

¹⁸⁹ See *supra* Part II.

¹⁹⁰ See *supra* Part II.A.2.

¹⁹¹ *SRI Int’l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1118 (Fed. Cir. 1985) (en banc) (“It is only after the claims have been construed without reference to the accused device that the claims, as so construed, are applied to the accused device to determine infringement.”).

¹⁹² *Wilson Sporting Goods Co. v. Hillerich & Bradsby Co.*, 442 F.3d 1322, 1331 (Fed. Cir. 2006) (“[T]he rule forbids a court from . . . reach[ing] a preconceived judgment of infringement or noninfringement. In other words, it forbids biasing the claim construction process to exclude or include specific features of the accused product or process.”).

¹⁹³ *Id.* at 1330-31.

description of the accused device, it “cannot fully and confidently review the infringement judgment, including its claim construction component.”¹⁹⁴ The Federal Circuit accordingly softened its rule to allow a district court to refer to the accused device for context during the claim construction process.¹⁹⁵ This development has led at least one commentator to posit that claim construction and infringement analysis are two inquiries that are effectively merged.¹⁹⁶ Indeed, some district judges have adopted the practice of combining claim construction proceedings with summary judgment hearings.¹⁹⁷ In effect, the accused device is serving as a reference point for construing claims in federal court, which is unavoidable, given that *some* context is needed to focus the claim construction analysis.

Yet, there is a danger to allowing an accused device to serve as the primary or predominant point of reference. This is because claim constructions from one case may have preclusive effects in concurrent or future cases.¹⁹⁸ (In fact, consistent with its “construe once, apply everywhere”¹⁹⁹ philosophy of claim construction, the Federal Circuit has occasionally taken upon itself to construe terms that are not necessary to decide the appeal—for the benefit of future cases.²⁰⁰) A claim construction that resulted from using an accused product as the primary reference point is problematic for application in other cases because the construction may be idiosyncratic to that accused product. In addition, the selection of that particular accused product for litigation and the progression of that litigation to a final judgment for which preclusive effects may attach to the underlying claim construction would be, in a word, fortuitous. Moreover, the construction of a term often evolves during litigation as the parties’ understanding of the accused product evolves or when additional accused products are added.²⁰¹ To avoid having the first accused product unduly

¹⁹⁴ *Id.* at 1330.

¹⁹⁵ *Id.* at 1331.

¹⁹⁶ Jason R. Mudd, *To Construe or Not to Construe: At the Interface Between Claim Construction and Infringement in Patent Cases*, 76 MO. L. REV. 709 (2011).

¹⁹⁷ PETER S. MENELL ET AL., PATENT CASE MANAGEMENT JUDICIAL GUIDE 2-24 (3d ed. 2016).

¹⁹⁸ *Id.* at 5-88 to 5-89.

¹⁹⁹ This is an adaptation of Sun Microsystems’s “Write Once, Run Anywhere” motto for the Java programming language, which was designed for cross-platform compatibility. See *Write once, run anywhere?*, COMPUTERWEEKLY.COM (May 2002), at <http://www.computerweekly.com/feature/Write-once-run-anywhere>.

²⁰⁰ See, e.g., *Microsoft Corp. v. Multi-Tech Sys., Inc.*, 357 F.3d 1340, 1351 (Fed. Cir. 2004) (noting that, despite resolution of issues sufficient to support affirmance, “we consider it to be in the interest of judicial efficiency, as well as in the interest of any future litigation concerning these patents, to review the other contested claim limitations”).

²⁰¹ *Jack Guttman, Inc. v. Kopykake Enters.*, 302 F.3d 1352, 1361 (Fed. Cir. 2002) (“District courts may engage in a rolling claim construction, in which the court revisits and

influence how a claim will be construed, an alternative reference point is necessary that is not case-specific—which leaves few options other than the specification.

C. Implications, Concerns, and Objections

1. Impact on the Disclosure Requirement

Apart from mitigating the *Rashomon* problem, applying means-plus-function analysis to all claim terms may have a beneficial side-effect: a greater focus on the disclosure during prosecution. Scholars have called for strengthening the disclosure requirement,²⁰² which is a topic that has been the subject of renewed focus by the PTO.²⁰³

Enforcing the disclosure requirement depends largely on having the examiners closely review applications to ensure that each claim is adequately supported by the disclosure. But such vigilance may be difficult to achieve, given the agency problems associated with examiners and patent attorneys, each of whom handles a high volume of applications.²⁰⁴ Improved compliance with the disclosure requirement is more likely if we were to create conditions that make it: (1) strategically desirable for applicants to invest the additional resources to prepare detailed disclosures that adequately support the claims; and (2) easier for the examiner to police compliance.

To induce the applicant to prioritize disclosure issues as a matter of strategy, we can rely on the fact that patents are, at bottom, litigation instruments.²⁰⁵ The application of means-plus-function analysis to all claim terms would tie the disclosure requirement directly to an item that drives litigation strategy: claim construction. Currently, the prospect of invalidity based on a disclosure defect is not a salient concern of patentees, who have

alters its interpretation of the claim terms as its understanding of the technology evolves.”).

²⁰² See, e.g., Jeanne C. Fromer, *Patent Disclosure*, 94 IOWA L. REV. 539 (2009).

²⁰³ See, e.g., U.S. PATENT & TRADEMARK OFFICE, *Topics Announced for Case Studies Pilot*, DIRECTOR’S FORUM: A BLOG FROM USPTO’S LEADERSHIP (May 18, 2016) (announcing case study entitled “Enforcement of 35 U.S.C. §112(a) written description in continuing applications”), at http://www.uspto.gov/blog/director/entry/topics_announced_for_case_studies.

²⁰⁴ See Jeremy W. Bock, *Patent Quantity*, 38 U. HAW. L. REV. 287, 318 (2016) [hereinafter Bock, *Patent Quantity*].

²⁰⁵ See Carl Shapiro, *Antitrust Limits to Patent Settlements*, 34 RAND J. ECON. 391, 395 (2003) (“What the patent grant actually gives the patent holder is the right to sue to prevent others from infringing the patent. . . . [A] real patent does not give the patentee ‘the right to exclude’ but rather the more limited ‘right to try to exclude’ by asserting its patent in court.” (emphasis in original)).

more to fear from summary judgment motions for noninfringement than those for lack of enablement or inadequate written description.²⁰⁶

Relatedly, the patent examiners' task of policing disclosure issues can be made easier if means-plus-function analysis were applied to all claims because the analysis would primarily entail checking for the presence of corresponding embodiments and features in the specification, rather than parsing claim language—which, as a more deliberative process, imposes a higher cognitive load as it may require the examiner to resist the answers suggested by his priors and those generated via heuristics.

2. No Particular Audience?

One question that may arise is: From whose perspective is the claim being read under the proposal to apply means-plus-function analysis to all claims? The short answer is that there is no particular reader or audience whose perspective is being targeted because the proposal seeks to capture the “cognitive default” of a substantial majority of heterogeneous readers.

The lack of a specific audience may strike some as unusual, given the emphasis in the case law on the need to interpret claims from PHOSITA's perspective. The claim construction canons developed through case law purport to capture the manner by which PHOSITA would have construed the claims. But PHOSITA is an entity with “mythical”²⁰⁷ abilities, possessing an exhaustive familiarity with both the prior art and the principles of claim construction under the current interpretive regime. Because very few individuals would embody PHOSITA's attributes, claim construction from the perspective of PHOSITA may not be robust in practice. Indeed, some commentators have called for abandoning the PHOSITA-focus of claim construction in favor of some other entity who might reflect the “typical” reader. For example, Greg Reilly has proposed an “ordinary reader” standard, whereby a claim term would be given “the meaning that an ‘ordinary reader’ would understand from how the specific claim term is used in the public record of the patent and prosecution

²⁰⁶ In one study of patent litigation in 2008-2009, accused infringers won 57% of their motions for summary judgment of noninfringement, Allison et al., *supra* note 123, at 1788, whereas summary judgment motions based on lack of enablement and inadequate written description were successful only 13% and 15% of the time, respectively. *Id.* at 1785 tbl.2.

²⁰⁷ See Michael Abramowicz & John F. Duffy, *The Inducement Standard of Patentability*, 120 YALE L.J. 1590, 1604 (2011) (“[T]he courts have constructed this person with attributes acknowledged to be highly fictional, and those fictional attributes make it difficult or impossible to gain any real intuition as to the cognitive processes of the mythical PHOSITA.”).

history.”²⁰⁸ John Golden has argued in favor of “the perspective of a patent attorney with access to the technological knowledge of an ordinary artisan.”²⁰⁹ By contrast, the proposal to apply means-plus-function analysis to all claim terms is not premised on targeting some hypothetical reader. Rather, this analytical rule was chosen because of its likelihood of yielding an estimate of claim scope that would closely approximate the conclusion reached by a substantial majority of a highly heterogeneous population of readers—many of whom are non-parsers—for which a “typical” reader may not exist.

John Golden has noted that leaving claim construction unmoored to a particular perspective may be undesirable as courts would be deprived of a reference point for mediating difficult cases arising from conflicts between various subrules used to construe claims.²¹⁰ With respect to BRI or the *Phillips* methodology, each of which has multiple subrules and requires extensive parsing, Golden’s concerns are on point. However, the difficulties envisioned by Golden would be much attenuated under a regime where all claims are subject to means-plus-function analysis, as there would be few (if any) competing subrules, and parsing would be minimal. That being said, the circumstances under which the perspective of PHOSITA may continue to be useful in an all-means-plus-function claiming regime would be in the evaluation of claim definiteness (by assessing the sufficiency of the disclosure of the corresponding structure, materials, or acts)²¹¹ and the determination of equivalents—which are tasks that are separate and distinct from parsing claim language with interpretive rules to yield an abstract construction.

More generally, the reliance on PHOSITA’s perspective as the governing interpretive viewpoint may be suboptimal, as it appears to have little practical effect: A study by Jonas Anderson and Peter Menell of over a decade of Federal Circuit claim construction opinions suggests that claim construction rarely, if ever, turns on an analysis of who the PHOSITA is in a given case.²¹² If, in practice, an analysis of PHOSITA is not an essential

²⁰⁸ Greg Reilly, *Judicial Capacities and Patent Claim Construction: An Ordinary Reader Standard*, 20 MICH. TELECOMM. & TECH. L. REV. 243, 248 (2014) [hereinafter Reilly, *Ordinary Reader*] (internal quotation marks added).

²⁰⁹ Golden, *supra* note 13, at 328 (arguing for “replacing the ordinary artisan rule with a rule declaring the governing perspective of claim construction to be a hybrid one: the perspective of a patent attorney with access to the technological knowledge of an ordinary artisan”).

²¹⁰ Golden, *supra* note 13, at 378-80.

²¹¹ See *Atmel Corp. v. Info. Storage Devices, Inc.*, 198 F.3d 1374, 1379 (1999).

²¹² Anderson & Menell, *supra* note 15, at 55-56 (“In only 12 of the 787 (1.5%) written claim construction opinions issued from 2000 through 2011 does the Federal Circuit even identify the PHOSITA.”).

feature of claim construction in most cases, then from whose perspective, exactly, is the claim being construed? By taking PHOSITA out of the picture, we are left with someone who has read the patent, who may or may not have a technical background, who may or may not have legal training, and who may or may not have an agenda—which may yield different interpretations for each reader. This describes a wide variety of individuals who may read patent claims because they are involved in, or may be affected by, the creation, use, and assertion of patent rights: inventors, scientists, engineers, business people, investors, patent examiners, attorneys, and judges. As such, a robust interpretive rule would not be one that is tied to a single type of reader, but instead would be optimized to allow most of the audience to reach a similar first-order construction.

3. Tradeoffs and Error Costs

The proposed all-means-plus-function claim construction regime is expected to yield greater certainty by creating less reader-to-reader variance. One ostensible tradeoff is grounded in the perception that means-plus-function claims are substantially narrower than non-means-plus-function claims,²¹³ giving rise to concerns about possible inventor undercompensation. Because claim scope under means-plus-function analysis is limited to the structures, materials, and acts disclosed in the specification and their equivalents, a related concern is that the proposal in this Article might force patentees to file voluminous specifications describing numerous embodiments in order to obtain adequate claim coverage. These concerns are seemingly reflected in application filing trends that suggest patentees generally disfavor means-plus-function claims, which, in recent years, are present in less than 10% of published patent applications.²¹⁴

When concerns about narrow claims and thick specifications are weighed against the potential enhancement to social welfare that might result from an all-means-plus-function claiming regime, the net effect is expected to be positive. As an initial matter, means-plus-function analysis may not necessarily result in a narrower scope overall when compared to a

²¹³ See, e.g., Nicholas R. Mattingly, *Avoiding Invocation of Functional Claim Language in Computer-Implemented Inventions*, IPWATCHDOG (June 18, 2015) at <http://www.ipwatchdog.com/2015/06/18/avoiding-invocation-of-functional-claim-language-in-computer-implemented-inventions/id=58803/> (“[D]rafting claims that avoid the invocation of [35 U.S.C.] § 112(f) is the first line of defense for . . . unnecessarily narrowing the scope of the invention.”).

²¹⁴ Dennis Crouch, *Means Plus Function Claiming*, PATENTLY-O (Jan. 14, 2013) at <http://patentlyo.com/patent/2013/01/means-plus-function-claiming.html>.

“plain meaning” construction, given that the boundaries of a means-plus-function claim include an equivalence aspect.²¹⁵ To the extent that means-plus-function claims may be narrower,²¹⁶ they may be less susceptible to invalidation based on prior art.

More importantly, the current *Phillips*/BRI claim construction regime does not have an efficient mechanism for policing claim overbreadth. Unlike means-plus-function analysis, “plain meaning” constructions are susceptible to the “*Morse* problem,”²¹⁷ whereby the scope of a claim may be stretched beyond the specific solution (and equivalents) invented by the patentee to cover embodiments that the patentee either chose not to disclose or failed to contemplate.²¹⁸ A related phenomenon is functional claiming, in which patentees use functional claim language (that has been crafted to avoid triggering means-plus-function analysis) in order to claim all implementations that achieve a particular result.²¹⁹ Overly broad claims that allow patentees to capture a wide range of embodiments they did not actually disclose may negatively impact social welfare by stifling the introduction of alternative or improved products to the market²²⁰ and depriving the public of the benefit of the detailed descriptions of those embodiments over which the patentee has been granted exclusive rights.

The impact of an all-means-plus-function claiming regime may vary according to the type of technology, especially where prosecution practices may differ as a result of technology-dependent precedents.²²¹ For example, Federal Circuit case law imposes a more rigorous disclosure requirement for biotechnology inventions compared to software inventions.²²² Because

²¹⁵ Cotropia, *Deference*, *supra* note 129, at 1102 n.27.

²¹⁶ One context in which means-plus-function analysis might systematically yield narrower claims would be in comparison to the application of the doctrine of equivalents. *See* *Lockheed Martin Corp. v. Space Systems/Loral, Inc.*, 324 F.3d 1308, 1320 (Fed. Cir. 2003) (“An accused structure that does not literally infringe a means-plus-function claim may nevertheless infringe under the doctrine of equivalents.”). This is because the former requires *identity* of function, whereas the latter extends to *insubstantially different* functions. *Hewlett-Packard Co. v. Mustek Sys.*, 340 F.3d 1314, 1321 (Fed. Cir. 2003). In addition, means-plus-function claims are analyzed as of the time of patent issuance, whereas the doctrine of equivalents is analyzed at time of infringement.

²¹⁷ *O’Reilly v. Morse*, 56 U.S. 62 (1853).

²¹⁸ Instead of limiting his claim to what he actually invented, i.e., the telegraph, *id.* at 108, Samuel Morse sought to claim “the essence” of his invention, which is “the use of the motive power of the electric or galvanic current, which I call electro-magnetism, however developed . . .” *Id.* at 112. The court found this claim to be “too broad, and not warranted by law.” *Id.* at 113.

²¹⁹ *See* Lemley, *Functional Claiming*, *supra* note 107, at 907-08.

²²⁰ *See id.* at 912.

²²¹ *See generally* Dan L. Burk & Mark A. Lemley, *Is Patent Law Technology Specific?* 17 *BERKELEY TECH. L.J.* 1155 (2002) [hereinafter Burk & Lemley, *Technology Specific*].

²²² *Id.* at 1156.

biotechnology claims are largely limited to what is disclosed in the specification,²²³ it is likely that the patent portfolios of biotechnology companies already contain numerous patents with thick disclosures and narrow claims.²²⁴ As such, for the biotechnology industry—where patents often directly impact a company’s commercialization plans²²⁵—the all-means-plus-function claiming proposal is likely to have a neutral or muted business impact as it is unlikely to result in a dramatic change to its prosecution or litigation practices.

In contrast to patents covering biotechnology inventions, those relating to high technology inventions (such as electronics and software) are subject to a relatively weak disclosure requirement,²²⁶ and often contain functional claims that effectively allow the patentee to claim all the solutions to a given problem or all the ways of implementing a concept, rather than a specific solution or a specific implementation that the patentee actually developed.²²⁷ As a result, the all-means-plus-function claiming proposal is likely to have a dramatic impact on the patent portfolios in the high technology industry: Patentees may be prompted to file thicker specifications with more embodiments, and the aggregate claim scope of most patents will be substantially narrower as they will cover only the content of the disclosure and any equivalents. As a consequence, this could depress the number of patent suits involving the high technology industry. Despite a dramatic impact on prosecution and litigation practices, it is possible that the net business impact of the all-means-plus-function claiming proposal may be muted in the high technology industry, given that the link between patenting and innovation appear to be inconclusive for industries other than biotechnology,²²⁸ and high technology companies routinely ignore patents.²²⁹

²²³ *Id.* at 1182.

²²⁴ *See id.* at 1182.

²²⁵ *See* Benjamin N. Roin, *Unpatentable Drugs and the Standards of Patentability*, 87 TEX. L. REV. 503, 545-47 (2009) (describing how development efforts for a drug might be halted if patent protection were to be denied for that drug).

²²⁶ *See* Burk & Lemley, *Technology Specific*, *supra* note 221, at 1185.

²²⁷ *See* Lemley, *Functional Claiming*, *supra* note 107, at 907-08.

²²⁸ *See, e.g.*, Paul J. Heald, *A Transaction Costs Theory of Patent Law*, 66 OHIO ST. L.J. 473, 474 (2005) (summarizing literature); Edwin Mansfield, *Patents and Innovation: An Empirical Study*, 32 MGMT. SCI. 173, 180 (1986) (“Despite the fact that the patent system generally is defended at least partly on the grounds that it increases the rate of innovation, the present study indicates that its effects in this regard are very small in most of the industries we studied.”).

²²⁹ *See* Mark A. Lemley, *Ignoring Patents*, 2008 MICH. ST. L. REV. 19, 20-21 (2008) (“[C]ompanies do not seem much deterred from making products by the threat of . . . patent litigation. Intel continues to make microprocessors, Cisco routers, and Microsoft operating system software, even though they collectively face nearly 100 patent-infringement

Given the difficulty of using words to capture an invention with precision,²³⁰ means-plus-function claiming might be ultimately less costly. A central claiming regime (of which means-plus-function claiming is a species) allows the invention to be claimed without the abstract wordsmithing required under peripheral claiming.²³¹ As Doug Lichtman has observed, “the costs of drafting bulletproof claim language can be substantial,”²³² and the marginal benefit for improving claim language is rather small given that most patents are not read,²³³ let alone litigated.²³⁴ Furthermore, given the inherent limitations of language,²³⁵ the level of linguistic precision necessary for a well-functioning peripheral claiming regime may not, in fact, be achievable in many cases,²³⁶ especially for the most innovative inventions for which the relevant terminology has not yet matured.²³⁷

Some may wonder if the notice function might be undermined by means-plus-function claiming because an equivalents analysis may be required to determine literal infringement. Although this claiming regime may not yield the most precise claims, they may perform an adequate job in most instances.²³⁸ To the extent that there might be uncertainty in claim scope, Jeanne Fromer observes that “[u]ncertainty in peripheral claims lies in the precise reach of each of the claim words, whereas uncertainty in central claims lies in how many embodiments will be found to be

lawsuits at a time and receive hundreds more threats of suit each year.”).

²³⁰ See, e.g., *Autogiro Co. of Am. v. United States*, 384 F.2d 391, 396 (Ct. Cl. 1967) (“The very nature of words would make a clear and unambiguous claim a rare occurrence.”).

²³¹ See Fromer, *supra* note 24, at 777.

²³² Lichtman, *supra* note 92, at 2015.

²³³ *Id.*

²³⁴ See Lemley, *Rational Ignorance*, *supra* note 136, at 1501 (estimating that “at most only about two percent of all patents are ever litigated”).

²³⁵ See *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 731 (U.S. 2002) (“The language in the patent claims may not capture every nuance of the invention or describe with complete precision the range of its novelty.”).

²³⁶ See, e.g., Margaret Jane Radin, *Patent Notice and the Trouble with Plain Meaning*, 96 B.U. L. REV. 1093, 1116 (2016) (“[T]he idea that patent claim notice could be rendered precise enough to justify an analogy with physical fences is illusory.”).

²³⁷ *Autogiro Co. of Am. v. United States*, 384 F.2d 391, 397 (Ct. Cl. 1967) (“Often the invention is novel and words do not exist to describe it. The dictionary does not always keep abreast of the inventor. It cannot. Things are not made for the sake of words, but words for things.”); Reilly, *Ordinary Reader*, *supra* note 208, at 265 (listing examples illustrating how the limitations of language may affect how inventions are claimed).

²³⁸ See Fromer, *supra* note 24, at 765 (“Even if central claims do not provide perfect content notice of categorical boundaries, the evidence indicates that it might do a good job at communicating the crux of the protected embodiments.”).

substantially similar to the more limited claimed set.”²³⁹ Under a regime where all claims are construed using means-plus-function analysis, it is expected that a reader will arrive at a first-order approximation of claim scope that will likely correspond to the first-order approximations of most of the other readers, while the labor-intensive and costly determination of the precise claim scope based on an analysis of equivalent structures can be delayed to when litigation actually occurs.

Finally, the current *Phillips*/BRI claim construction regime allows creative attorneys to stretch the claims to cover items that were never contemplated by the inventor or in wholly unexpected ways, so as to lead to inventor *overcompensation*.²⁴⁰ Overclaiming could become less prevalent in a central claiming regime where the focus is on the substance of the invention rather than the language of the claims.²⁴¹ As such, means-plus-function analysis, as a modern derivative of central claiming, provides a way to interpret claims that makes unfair surprise to the public less likely by cabining claim scope to closely follow the disclosure—an item of public record that is fixed in time²⁴² and to which every reader of a patent claim has access.²⁴³

4. Claim Construction: A Blended Inquiry?

By applying means-plus-function analysis across the board, and effectively returning to central claiming, the resulting focus on the content of the disclosure and technical equivalents largely obviates the need to closely parse claim language. By de-emphasizing the claim language while elevating the disclosure, there is a convergence between the claim language and the embodiments of the invention. This may turn claim construction essentially into a fact-intensive inquiry specific to each case, with the core issue being whether the accused product (or the prior art in an invalidity analysis) corresponds to the embodiment shown in the disclosure or an equivalent.

As such, this proposal would take the claim construction process back to how patent claims were litigated at a time before *Markman*, when the

²³⁹ *Id.* 776.

²⁴⁰ See Lemley, *Functional Claiming*, *supra* note 107, at 930 (“[P]atentees can often benefit from ambiguous patent claims by twisting the language of the patent claim to cover something the inventor never in fact had in mind at the time.”).

²⁴¹ Burk & Lemley, *Fence Posts*, *supra* note 2, at 1762.

²⁴² There may be changes made to an issued patent through reissues or reexaminations.

²⁴³ Patents are widely available and searchable through the PTO website, <https://www.uspto.gov/patents-application-process/search-patents#heading-1>, as well as other online resources such as Google Patents, <https://patents.google.com>.

boundaries of a claim were determined as part of a factual inquiry regarding infringement or validity, rather than as a standalone legal issue.²⁴⁴ Indeed, having claim construction occur as step separate from an inquiry into infringement or validity is a relatively recent phenomenon that started in 1995.²⁴⁵ However, it may be worth rethinking the wisdom of separating out claim construction as a discrete, standalone legal issue, as the highly artificial nature of the *Markman*-process is one of its major weaknesses. As the discussion of the behavioral elements suggest, parsing the claim language in a separate step to craft an abstract construction of the boundaries of the invention is an undertaking that imposes a high cognitive load and may work properly only in very limited circumstances where the readers have the luxury of careful deliberation and reliable mechanisms for debiasing exist. Realistically, such conditions do not exist for any reader. For most readers, parsing is incomplete or does not occur at all, such that the role of the claim language in defining the invention in the mind of the reader takes a secondary role to the embodiments described in the specification. If the notice function of patents is to be enhanced, the rules of claim interpretation should track more closely the way in which a claim is likely to be read by a majority of potential readers, rather than an artificial methodology that is likely to be understood by only a small subset of readers, who may not necessarily follow it correctly or consistently.

CONCLUSION

A major complicating factor in the process of claim interpretation is the influence of a reader's cognitive biases, priors, and situational considerations. The current claim interpretation regime is designed largely for technically-trained patent law experts (such as some Federal Circuit judges) whose circumstances allow them to engage in extensive deliberative analysis—but even they are susceptible to having behavioral elements influence their decisions. For this reason, an improved claim interpretation methodology should be adopted that is robust enough to accommodate a wide variety of readers, each of whom brings his or her own cognitive biases, priors, and situational considerations to the analysis. Although these behavioral elements cannot be eliminated, their effects can be mitigated. Because certain cognitive biases yield the same or similar answer for most readers, one way to mitigate variance in the readers' answers is to craft a claim interpretation rule, such as means-plus-function analysis, that tracks this “cognitive default” answer. Paradoxically, the best way to fight

²⁴⁴ See Burk & Lemley, *Fence Posts*, *supra* note 2, at 1770.

²⁴⁵ *Id.* at 1777.

cognitive biases may be to exploit them.