2005

Patent Claim Interpretation and Information Costs

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by
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The concept of invention is crucial to patent law. Inventions of patentable quality are what the patent system is trying to encourage. In order to provide this incentive to produce such inventions, the patent system must provide protection for the invention. The problem the patent system runs into is that inventions are difficult to define—the difficulty stemming in part from the intangible nature of inventions. As a result, patent law encounters an information cost problem. Everyone in the patent system needs information about the invention, but the invention's intangibleness makes this information costly to produce, collect, and comprehend. Patent law responds by enforcing certain information producing rules. These information producing rules do not completely rectify the information cost problem in defining the edges of patent protection. The patent claim, while meant to inform everyone about the boundaries of the grant of exclusivity, must be interpreted to be of any use. This Article first addresses the information cost issues presented by the process of interpreting the patent claim. It then takes a specific look at the information costs generated when using two different information tools during claim interpretation—the specification and external definitional sources such as dictionaries. This Article concludes that full use of the specification early in the claim interpretation process minimizes information costs. It further concludes that any interpretation methodology should consider the information costs it imposes on both the patentee and any patent observer, keeping in mind the invention-specific information patent law already requires to be produced.

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[*] Associate Professor of Law, Tulane University School of Law. I would like to thank the presenters and participants of the Tenth Annual Lewis & Clark Law School Fall Business Law Forum for their helpful comments and suggestions. I would also like to thank Mark Lemley and Joe Miller for their additional comments and suggestions. I would like to give special thanks, as always, to Dawn-Marie Bey for her invaluable insights on this Article.

I. INTRODUCTION

Almost ten years ago, the United States Court of Appeals for the Federal Circuit issued an en banc decision in *Markman v. Westview Instruments, Inc.*, where it held that matters of patent claim interpretation were in the sole province of the court, not the jury.[1] A year later, the Supreme Court affirmed the Federal Circuit's decision.[2] These decisions have since incited a wealth of jurisprudence from the Federal Circuit on the issue of claim interpretation—more particularly, on the method used to interpret claim terms. Issues such as what sources are to be considered and how these sources should be used when defining claim terms form the heart of the current debate on the proper methodology for courts to employ. The Federal Circuit recently took the methodology issue en banc, in *Phillips v. AWH Corp.*, to hopefully adopt a single approach to claim interpretation.[3] With over ten years of rich jurisprudence in the area, and a recent en banc decision focused on the issue, the question as to the proper method for interpreting claims is ripe for answering.

To better answer this question, the subject to be defined—the invention—needs to be examined. The concept of invention is crucial to patent law. Inventions of patentable quality are what the patent system is trying to encourage. And in order to provide this incentive to produce such inventions, the patent system must provide protection for the invention. Furthermore, everyone in the patent system must know the contours of the protected invention to make determinations on issues of the invention's infringement and validity. The problem the patent system runs into is that inventions are difficult to define—the difficulty stemming in part from the intangible nature of inventions. Inventions are ideas, information, and concepts. While an invention has physical manifestations, these are merely examples of the invention. An

[1] 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996).
[2] Markman v. Westview Instruments, Inc., 517 U.S. 370, 373–74 (1996).
[3] 376 F.3d 1382, 1382–83 (Fed. Cir. 2004) (en banc) (per curiam) ("*Phillips II*").

invention's inherent lack of physicality, lack of "thingness," makes it tough for any observer to comprehend.

But for the patent system to work, the invention, particularly its edges, must be defined and this definition communicated to all of those involved. Patent law, therefore, encounters an information cost problem. Everyone in the patent system needs information about the invention, but the invention's intangibleness makes this information costly to produce, collect, and comprehend. Both the inventor and any observer will expend energy and resources in understanding the patented invention. Patent law responds to this situation by creating certain information producing rules. These rules are located in 35 U.S.C. § 112 and dictate the creation of the patent document itself. The onus is placed on the patentee to provide a specification and one or more claims for the whole world to see. The specification must include a description of the invention, how to make and use the invention, and any best way of practicing the invention known to the inventor. The patent must also include one or more claims that specify the borders of the invention the patentee wishes to protect.

Another problem is encountered because the patent claim does not get the patent system all the way there. The patent claim, while meant to inform everyone about the boundaries of the grant of exclusivity, must be interpreted to be of any use. Claim interpretation, also known as claim construction, places the claims in context to resolve a given dispute—either as to the claim's infringement by an allegedly infringing product or process or as to the claim's validity. Here the jurisprudence sparked by the Federal Circuit's and Supreme Court's decisions in *Markman* enters the picture. The current questions regarding interpretation focus on the use of different informational sources, such as the specification and definitional sources outside the patent. These questions present information cost issues of their own—costs associated with the production, collection, and processing of this information in order to define the exact area of exclusivity given by the patent claim. The lower the information costs incurred during this process, the easier it is for any actor in the patent system to comprehend the most crucial aspect of a patent—its scope of exclusivity.

This Article addresses the information cost issues presented by the process of interpreting the claimed invention. It takes a specific look at the information costs generated when using two different information tools—the specification and external definitional sources such as dictionaries. This Article concludes that full use of the specification early in the claim interpretation process minimizes information costs. The information in the specification is already tailored to and in context with the claim under interpretation. In addition, the specification provides invention-specific information in a low cost fashion and includes information that caters to an interpreter's familiarity and ease with understanding tangible "things." In contrast, a claim interpretation methodology that employs a heavy presumption in favor of external definitional sources introduces information costs. The selection and processing of these definitional sources can be extremely costly. Furthermore, such an approach squanders the cost savings gained by using the whole specification early in the interpretation process. This Article further concludes that any

interpretation methodology should consider the information costs it imposes on both the patentee and any patent observer, keeping in mind the invention-specific information patent law already requires to be produced.

II. THE "INVENTION," INTANGIBLENESS, AND RELATED INFORMATION COSTS

A. Need to Define the Invention

Patent law is classically viewed as creating an incentive to invent.[4] This incentive is provided by giving the inventor exclusive control over her invention.[5] Exclusivity is needed because inventions are similar to public goods in that their consumption is not inherently exclusive.[6] Like public goods, inventions, being essentially ideas, can be consumed by many at the same time without any depletion. Overuse of an idea does not exhaust the idea.[7] And like public goods, the use of an invention is nonrivalrous in that one individual's use does not interfere with another's simultaneous use of the invention. The public goods nature of an invention makes it difficult, if not impossible, for the inventor to exclude others from using her invention.[8]

To add to this lack of inherent control over the invention, the inventive concept, once it is disclosed to the public, is easily copied and disseminated.[9]

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[4] *See* U.S. CONST. art. I, § 8, cl. 8; Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 480–81 (1974) ("The patent laws promote this progress by offering a right of exclusion for a limited period as an incentive to inventors to risk the often enormous costs in terms of time, research, and development."); Mark A. Lemley, *Ex Ante versus Ex Post Justifications for Intellectual Property*, 71 U. CHI. L. REV. 129, 129–30 (2004) (referring to the incentive to invent as the "ex ante justification" for intellectual property law).

The incentive to invent theory is not the only theory of patent law. *See, e.g.*, Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265, 276–78 (1977) (describing the prospect theory of patents—an ex post patent theory).

[5] *See* Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989, 995–96 (1997) (noting that by giving the inventor "control over the use and distribution of their ideas," intellectual property law "encourage[s] them to invest efficiently in the production of new ideas and works of authorship").

[6] *See* Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 VA. L. REV. 1575, 1604–05 (Nov. 2003) (indicating that "information is a public good for which consumption is nonrivalrous—that is, one person's use of the information does not deprive others of the ability to use it").

[7] *But see* ROBERT P. MERGES ET AL., INTELLECTUAL PROPERTY IN THE NEW TECHNOLOGICAL AGE 12 n.2 (3d ed. 2003) (noting that certain second-order distorting effects may lead to resource depletion—that is, of resources consumed by the implementation of the invention).

[8] *See* Joseph Scott Miller, *Building a Better Bounty: Litigation-Stage Rewards for Defeating Patents*, 19 BERKELEY TECH. L.J. 667, 680–81 (2004) (discussing the "free rider problem" the public good nature of invention creates and how it "undercut[s] an inventor's incentive to risk inventing").

[9] *See* Katherine J. Strandburg, *What Does the Public Get? Experimental Use and the Patent Bargain*, 2004 WIS. L. REV. 81, 104–05 ("The production of patentable inventions is understood to be different from other commercial activity because the investment in new

Others can obtain the benefits of the inventor's work without needing to expend the same research and development costs spent by the inventor.[10] Others can compete with the inventor without incurring these initial sunk costs. If an inventor decides to invent, she is unlikely to be able to demand the price necessary to recoup her research and development costs because others, who did not have to bear those costs, will drive the price down. Faced with such a scenario, a potential inventor will likely not invent, because the post-invention environment is not perceived as conducive to recovery of her initial costs. Without some type of exclusive control, patentable inventions will be under-produced.[11]

Patent law provides an incentive to invent by giving the inventor the ability to exclude these would-be competitors.[12] Patent law allows the inventor to erect a fence around her invention and control its use. The patent system gives the inventor exclusivity over her invention, allowing her to prevent others from producing or implementing the invention at a lower cost.[13] The inventor is then free to charge the price necessary to recover her research and development costs.

In order to provide the inventor exclusivity over the invention and create an incentive to invent, patent law must first define the boundaries of this exclusivity. Barriers must be erected to establish what the inventor gains exclusive control over. Patent law must identify what the invention is, and, more particularly, its exact contours. Such a definition is needed for substantive determinations—to enact particular patent policies and balance the level of incentive to invent against the need for dissemination of information. But perhaps more fundamentally, lines must be drawn simply to inform the inventor

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ideas, unlike the investment in capital equipment or materials, is assumed to be appropriable by competitors at very little expense.").

[10] *See* Gideon Parchomovsky & Peter Siegelman, *Towards an Integrated Theory of Intellectual Property*, 88 VA. L. REV. 1455, 1466–67 (2002) (stating that "absent legal protection, competitors would copy such works without incurring the initial costs of producing them [and, therefore,] [u]nauthorized reproduction would drive down the market price to the cost of copying, original authors and inventors would not be able to recover their expenditures on authorship and R&D, and, as a result, too few inventions and expressive works would be created").

[11] There are, notably, other incentives to produce inventions. *See, e.g.*, Glynn S. Lunney, Jr., *Patent Law, the Federal Circuit, and the Supreme Court: A Quiet Revolution*, 11 SUP. CT. ECON. REV. 1, 39 (2004) ("[E]ven in the absence of exclusive rights to the intangible information component of an innovative product, the private market, operating against a background of property rights in tangible things, will generate some incentive for innovation."). Patent law based incentives to invent are still needed, however, to ensure that inventions are created where the "social value exceeds their social costs" but are "unprofitable based upon the rents available from tangible property rights alone." *Id.*

[12] *See* Lemley, *supra* note 5, at 995–96. Notably, patent law can only provide a perception that the patentee will be able to recover costs. *See* Lemley, *supra* note 4, at 129–30; WESLEY M. COHEN ET. AL., PROTECTING THEIR INTELLECTUAL ASSETS: APPROPRIABILITY CONDITIONS AND WHY U.S. MANUFACTURING FIRMS PATENT (OR NOT) 3 n.4 (Nat'l Bureau of Econ. Research, Working Paper 7552, 2000), http://www.nber.org/ papers/w7552 (noting that it is the "expectation" of patent law facilitating the generation of "ex post rents" that provides the incentive to invent).

[13] *See* Lemley, *supra* note 4, at 129–30; COHEN ET AL., *supra* note 12, at 3 n.4.

and the public where the area of protection begins and ends. Definition of the protected invention is needed in patent law for definition's sake. The patent system cannot give the inventor effective control over her invention if it cannot delineate what the inventor gets control over.

For the patent system's award of exclusivity and control over the invention to operate properly, all parts of the patent process and all actors who come in contact with the patent must be able to identify the invention being protected. From the beginning, the invention for which protection is sought must be identified. The inventor,[14] when she goes to her patent attorney, needs to understand the contours of the invention over which the patent application will give her protection. This understanding allows her to make determinations as to whether the defined invention is what she actually invented and whether the scope of protection is broad enough to make a patent worth pursuing.[15] The patent attorney also needs to know the invention's delineations. The patent attorney must, throughout the patent application process, make determinations regarding the invention as compared to prior art and the specification.[16] Without knowing what the invention is for which protection is sought, the patent attorney cannot make informed decisions regarding the novelty, utility, or nonobviousness of the invention. The same holds true for the patent examiner—the administrative official in the United States Patent and Trademark Office ("USPTO")—who reviews the application to determine whether the invention is patentable and worthy of patent protection. In order to properly make such a determination, the patent examiner must also know what the invention is for which the inventor seeks exclusivity.[17]

The need for a definition of the patented invention continues after the patent application leaves the USPTO as an issued patent. The patentee must know the scope of her invention that is protected so she can understand the breadth of the market over which she has exclusivity.[18] This knowledge allows the incentive structure of the patent system to be completed—identifying the types of products the inventor can produce and sell exclusively in order to recoup her initial research and development costs. Her knowledge of the protected invention also allows her to know from whom she can reasonably

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[14] This Article will also refer to an inventor who applies for a patent as a "patent applicant." An inventor whose patent is issued is also referred to as the "patentee." The patent may be assigned to others, who are then considered the patent owner or patent holder. *See* 35 U.S.C. § 261 (2000) (describing ownership and assignment in patent law).

[15] *See* 35 U.S.C. § 115 (2000) (requiring the patent applicant to take an oath that "he believes himself to be the original and first inventor of the process, machine, manufacture, or composition of matter, or improvement thereof, for which he solicits a patent").

[16] *See* 37 C.F.R. § 1.56 (2003) (noting the requirements on patent attorneys to disclose material related to an invention's patentability).

[17] *See, e.g.*, *In re* Bigio, 381 F.3d 1320, 1324 (Fed. Cir. 2004) (indicating that the patent examiner first must understand the invention under examination before making patentability determinations).

[18] *See* 35 U.S.C. § 271(a) (2000) (noting that "whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent").

request royalties or with whom she can enter into licensing deals. The inventor's continuing knowledge of the scope of exclusivity is needed to maintain effective control over her invention. The same knowledge is needed for parties other than the patent holder—those who compete with the inventor or whom the patentee has licensed or assigned the patent.[19] A competitor might also want to know the contours of the protected invention so that they can design around or improve upon the invention.[20] Other members of the public who might want to invest in the patent holder's company or simply buy the patent also need to know the range of exclusivity the patent provides in order to assess the value the patent produces. All of these observers want to know the exact invention the patent protects to determine the characteristics and breadth of the market over which the patent provides exclusivity.[21]

Finally, courts need to know the invention being protected in order to resolve disputes over the infringement of the patent.[22] A patent provides exclusivity over the invention, and those who practice the invention without the patent holder's approval are said to infringe.[23] In order to make a determination of infringement, the accused product or process is evaluated to see if it uses all of the elements, including equivalents, of the patented invention.[24] The allegedly infringing product or process is not compared to a commercial embodiment of the invention, but the patented invention itself.[25] To make a decision on infringement, a court must first understand the scope of the invention the patent protects.[26] In order for the patent holder to enforce her exclusivity over the patented invention, a court must comprehend the breadth of that exclusivity.

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[19] These parties can collectively be referred to as "observers," borrowing a term from Long's work. *See* Clarisa Long, *Information Costs in Patent and Copyright*, 90 VA. L. REV. 465, 489–95 (2004) (dividing up these observers of the patent into three groups—avoiders, transactors, and builders).

[20] The improvement upon and designing around of patented inventions is a fundamental policy in patent law. *See* Craig Allen Nard, *A Theory of Claim Interpretation*, 14 HARV. J.L. & TECH. 1, 36–43 (2000).

[21] These observers may also want to know the contours of the invention that is protected to make a determination as to the validity of a patent grant on such an invention.

[22] *See* Markman v. Westview Instruments, Inc., 517 U.S. 370, 373–74 (1996) (noting that to resolve a question of infringement, the scope of the protected invention must first be ascertained).

[23] *See* 35 U.S.C. § 271(a) (2000).

[24] *See* Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 535 U.S. 722, 732 (2002) ("The scope of a patent is not limited to its literal terms but instead embraces all equivalents to the claims described.") (citing Winans v. Denmead, 56 U.S. (15 How.) 330, 347, 14 L.Ed 714 (1854)).

[25] *See, e.g.*, SRI Int'l v. Matsushita Elec. Corp. of Am., 775 F.2d 1107, 1121 (Fed. Cir. 1985).

[26] *See* Alloc, Inc. v. Int'l Trade Comm'n, 342 F.3d 1361, 1368 (Fed. Cir. 2003). Similar determinations as to the patented subject matter must also be made to resolve issues of invalidity. *See* Smiths Indus. Med. Sys., Inc. v. Vital Signs, Inc., 183 F.3d 1347, 1353 (Fed. Cir. 1999).

B. Intangibleness of the Invention

The problem the patent system encounters is that defining the invention is not that simple. The difficulty in definition stems, at least in part, from the characteristics that comprise an invention. An invention is essentially information representing an idea in the inventor's head. The prototypical invention—the widget—is not the physical widget itself, but the idea of the widget.[27] An inventive idea usually identifies a problem to be solved and how to solve it.[28] It is comprised of an underlying concept, a function, and, in some cases, a particular purpose. The idea cannot be identified by sight, touch, or smell. There are physical manifestations of this information—words on a page describing the invention or a working model exemplifying the information—but the invention at its core, the invented widget for example, is an idea with no inherent physical form.[29] There is nothing tangible that one can identify as being the "widget invention." One can only actually see examples or embodiments of the widget invention.

Inventions are intangible.[30] Inventions lack a "thingness."[31] There is no thing in real space that can be identified as the invention. The intangibleness of inventions is the reason inventions can be equated to public goods. An invention can be in two places at the same time. If an invention was a physical thing, then its use would be inherently rivalrous. An invention's lack of thingness means that it has no real world boundaries to aid in its definition.[32] There is nothing one can see or touch to help one understand the extent of the invention. The intangibleness of an invention makes it hard to comprehend and particularly difficult to recognize its borders. Inventions lack the attributes that make the exclusivity of real and personal property easy to grasp.[33]

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[27] *See* Timothy P. Terrell & Jane S. Smith, *Publicity, Liberty, and Intellectual Property: A Conceptual and Economic Analysis of the Inheritability Issue*, 34 EMORY L.J. 1, 30–32 (1985) (noting that intellectual property rights are "in essence claims against the whole world regarding some creative idea, one that does not depend on any particular tangible paper and ink or bits of metal and plastic").

[28] *See* 1 WILLIAM C. ROBINSON, THE LAW OF PATENTS FOR USEFUL INVENTIONS §§ 86–87 (1890).

[29] *See* Craig Allen Nard, *Certainty, Fence Building, and the Useful Arts*, 74 IND. L.J. 759, 760 (1999) (noting that it is "difficult to describe the particulars of an abstract concept").

[30] *See* David Lange, *Reimagining the Public Domain*, 66 LAW & CONTEMP. PROBS. 463, 467 (2003); Wendy J. Gordon, *An Inquiry into the Merits of Copyright: The Challenges of Consistency, Consent, and Encouragement Theory*, 41 STAN. L. REV. 1343, 1379–80 (1989); Jessica Litman, *The Public Domain*, 39 EMORY L.J. 965, 971 (1990) (noting that intellectual property "lacks the tangible qualities associated with real property"); Terrell & Smith, *supra* note 27, at 30–32; David Lange, *Recognizing the Public Domain*, 44 LAW & CONTEMP. PROBS., Autumn 1981, at 147, 147.

[31] *See* Gordon, *supra* note 30, at 1379–80 (discussing the lack of thingness of creative expression).

[32] *See* Long, *supra* note 19, at 473–74.

[33] *See id.* at 482–85 (comparing the lack of familiarity and reductionism of intellectual goods to the opposite in real property); Terrell & Smith, *supra* note 27, at 31–32.

Real and personal property have physical boundaries that help one define and understand them.[34] Real property has geographical demarcations identifying the limits of its scope.[35] The boundaries of a piece of real property may be conveyed by a fence or barbed wire. Real property may also be defined in a deed by noting the latitude and longitude of the property's borders. Personal property is also often defined by the tangible qualities of the item itself. The physical attributes of a diamond ring—its size, cut, clarity, and any imperfections—help one understand the exact "ring" being identified. The same is true of a jacket someone leaves at a restaurant. That piece of personal property is not recognized by an abstract concept—for example something that keeps one warm—but by the physical characteristics of the jacket—its size, shape, color, and condition. These tangibles of real and physical property help individuals comprehend and recognize the extent of exclusivity over that piece of property.[36] The boundaries of the land or jacket can be identified and understood by both its owner and the public.[37]

In contrast, the public cannot use its familiarity with real space to help it understand the extent of an invention.[38] The concepts and functions that make up an invention are tougher for people to comprehend than something tangible, particularly when trying to define the invention's borders. The physical world markers that individuals rely upon to help identify real and personal property are not there to assist in defining inventions. Therefore, while inventions clearly need to be defined for the patent system to operate, and the incentive to invent to be instituted, the process of defining inventions is a difficult one due, in part, to the intangibleness of inventions.

C. Information Costs Intangibleness Creates

In order to better understand or define something, one must collect information about it and process that information. In addition, someone must produce and provide the information to be consumed. "Information costs" are those costs incurred when generating, obtaining, and comprehending information.[39] Three activities generate these costs: the production of information, the finding of that information, and the actual processing and

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[34] *See* Gordon, *supra* note 30, at 1379; *see also* Long, *supra* note 19, at 472–74.

[35] *See* Gordon, *supra* note 30, at 1380 (identifying such physical demarcations surrounding real property).

[36] *See* Long, *supra* note 19, at 476–77, 482.

[37] This statement oversimplifies things. There are still certain boundaries on real or personal property that are not inherently tangible—such as easements and liens—and therefore tougher to comprehend for all involved individuals. And property, the legal concept, is itself intangible. *See* Adam Mossoff, *What is Property? Putting the Pieces Back Together*, 45 ARIZ. L. REV. 371, 413–15 (2003).

[38] *See* Long, *supra* note 19, at 482–85 (discussing the absence of familiarity when trying to understand inventions).

[39] *See* Henry E. Smith, *Exclusion and Property Rules in the Law of Nuisance*, 90 VA. L. REV. 965, 970–71 (2004) ("Information costs include the costs of generating information about rights in the process of delineating and publicizing them, as well as the costs incurred by third parties in processing information about the scope, nature, and validity of those rights.").

comprehension of that information. Information costs are particularly encountered when trying to understand a legal rule or the subject of that rule. Effort and expense are put forth when trying to comprehend the contours of legal rules and the items controlled by those legal rules. These costs of producing, obtaining, and processing information are incurred in many different areas of the law. But information costs are a particular issue when considering intellectual property regimes like the patent system.[40] Specifically when defining an invention, the information costs involved are those expended to understand the item subject to the patent laws, not the patent laws that govern the invention.[41]

The intangibleness of an invention generates information costs. Significant amounts of time and energy can be expended to obtain enough information about the invention to understand it.[42] To understand the edges of an invention involves even higher information costs.[43] One cannot rely on real space relations to provide information about an invention. The intangibleness of an invention makes determining and measuring its boundaries difficult because an observer cannot use her usual property measuring tools.[44] One must do more than simply observe the "thing" in real space and note its physical characteristics. The invention's attributes must first be identified and then digested to appreciate the full extent of the invention. In addition, there are costs associated with the production of invention information for processing. Therefore, with these heightened barriers to comprehension caused by the invention's lack of thingness, the information costs of defining the invention rise accordingly.

Again, to provide contrast, the information costs expended to comprehend the boundaries of real or personal property are considerably lower. One can easily collect information on real or personal property in order to define them. Real property is definable by its boundaries associated with certain real-space locations.[45] Fences or geographical markers can quickly and effectively convey

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[40] *See, e.g.*, Long, *supra* note 19 (discussing patent law in an information costs context).

[41] Accordingly, this Article, and the whole school of claim interpretation, focuses on what is being defined—the invention—as opposed to the laws under which that invention is governed. There can, however, be an overlap of the two, when certain patent requirements affect how a claim is interpreted. *See, e.g.*, SmithKline Diagnostics, Inc. v. Helena Labs. Corp., 859 F.2d 878, 882 (Fed. Cir. 1988) (noting that patent claims must be interpreted to be valid—to meet the requirements of patentability under 35 U.S.C. §§ 101–103, 112 (2000); noting that in those circumstances, information costs in defining the invention include the costs in understanding the laws governing patentability).

[42] *See* Long, *supra* note 19, at 476–77.

[43] *See id.* at 471 (noting how usually "property rights remain ambiguous around the edges").

[44] *See id.* at 483, 536–38 ("Information costs are more significant in intellectual property than in real property and personal property law. Because they are intangible, determining and measuring the boundaries of intellectual goods are more difficult than determining and measuring the boundaries of real property."); *see also* Richard A. Epstein, *Property Rights in cDNA Sequences: A New Resident for the Public Domain*, 3 U. CHI. L. SCH. ROUNDTABLE 575, 576 (1996) (noting how difficult it is to define an invention).

[45] *See* Gordon, *supra* note 30, at 1378–80.

the extent of a piece of real property. Similar information on personal property is simple to obtain. A diamond ring can be touched, worn, and observed—providing the observer with instant and easily consumable information identifying the article of personal property. The familiarity people have with physical things aids in the efficient processing of information regarding that piece of property.[46] There is also some reductionism at work that decreases information costs, where the actual object itself and the legal concept of property become one.[47] The diamond ring is both a diamond ring and a piece of personal property, and the attributes that define the ring also define it as a piece of property. The personal property aspects of the ring can become more complicated when dealing with questions of ownership and title, for example, but the comprehension of the property at issue is easier when it is so intimately tied to a physical manifestation. The information is also self-producing—the thing provides the information by simply being a thing without any additional costs.

The definition of the invention—so crucial to the operation of patent law—can therefore be examined from the perspective of information costs.[48] Inventions, being intangible, have the potential of imposing extremely high information costs on both the patent holder and the public.[49] Any actor in the patent process, of which there are many, must understand the extent of the protected invention.[50] The process of comprehension begins with defining the patented invention, which is difficult due to its intangible nature. The patent system must respond by using information-cost reducing mechanisms to provide invention-specific information in a low cost manner. Patent law must also ease the costs associated with the ultimate comprehension of the exact contours of exclusivity over the invention. And, when trying to minimize information costs, patent law should consider the net information costs incurred by the inventor and the public in providing, obtaining, and comprehending invention information.[51] Patent law's main tool for reducing these information costs is the publicly available patent document itself.[52]

III. PATENT LAW'S INFORMATION PRODUCING RULES

In response to the need to both provide information regarding the invention and ultimately define the exact invention the patent protects, patent

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[46] *See* Long, *supra* note 19, at 482–87.

[47] Again, this is not completely true—there are boundaries to the property rights over real and personal property that are not readily visible and the property rights themselves are intangible. *See supra* note 37.

[48] Such an examination has been performed before by Long, but not the specific one this Article takes—focusing on information costs associated with claim interpretation. *See, e.g.*, Long, *supra* note 19.

[49] *See id.* at 467–68 (noting some of the information cost problems patent and copyright law address).

[50] *See supra* Part II.A.

[51] *See* Long, *supra* note 19, at 496–99 (discussing the allocation of informational burdens on both the inventor and observers).

[52] *See* 35 U.S.C. § 112, paras. 1–2 (2000).

law invokes rules that require the production of information regarding the invention. These patent doctrines center on the publicly available patent document and requirements on the patent applicant—the inventor—to put certain invention-specific information in the patent. These information producing rules focus on the two basic parts of the patent document—the specification[53] and the claims.[54] Each of these parts plays a specific role in providing everyone with invention-specific information.

A. Specification-Related Information Producing Rules

Three requirements govern the type of information an inventor must put in the specification.[55] The specification must include a written description of the invention the inventor wishes to protect. The specification must also include an enabling description of the invention—how to make and use the invention. Finally, the specification must set forth the best mode of practicing the invention. All three of these requirements place the burden on the inventor to produce and publicly provide information regarding her invention.[56]

Patent law requires that the specification include a written description of the patented invention. This written description requirement necessitates that the patentee describe the patented invention in the specification.[57] The patentee must describe her invention in enough detail to convey to a person of ordinary skill in the art,[58] with reasonable clarity, that the inventor was in possession of the invention on the patent's filing date.[59] The written description requirement ensures that the specification describes the universe of inventions for which the patentee may decide to ask for exclusivity.[60] The written description requirement prevents the patentee from patenting something she has not demonstrated to the public that she has invented by the patent's filing date. The

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[53] The specification is also referred to as the "written description," because technically the specification includes the patent claims. *See* 35 U.S.C. § 112, paras. 1–2; Hester Indus., Inc. v. Stein, Inc., 142 F.3d 1472, 1483 (Fed. Cir. 1998). For purposes of this Article, the term "specification" will be used to refer to all parts of the patent document other than the claims.

[54] The prosecution history—the administrative record produced during the procurement of the patent—also necessarily contains information regarding the invention. *See* Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582–83 (Fed. Cir. 1996).

[55] *See* 35 U.S.C. § 112, para. 1.

[56] These requirements are meant, in part, to make the inventor meet her part of patent law's *quid pro quo*—exclusivity over the invention in exchange for public disclosure of the invention. *See* Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 484 (1974).

[57] *See* 35 U.S.C. § 112, para. 1 ("The specification shall contain a written description of the invention."); Vas-Cath, Inc. v. Mahurkar, 935 F.2d 1555, 1562–63 (Fed. Cir. 1991).

[58] A person having ordinary skill in the art is the intended audience of a patent. *See In re* Ruschig, 379 F.2d 990, 996 (C.C.P.A. 1967).

[59] *See* Moba, B.V. v. Diamond Automation, Inc., 325 F.3d 1306, 1320–21 (Fed. Cir. 2003); Ralston Purina Co. v. Far-Mar-Co, Inc., 772 F.2d 1570, 1575 (Fed. Cir. 1985); *In re* Kaslow, 707 F.2d 1366, 1375 (Fed. Cir. 1983).

[60] *See Vas-Cath, Inc.*, 935 F.2d at 1560–62. The written description requirement was initially meant to ensure the specification defined the patented invention. *See* Evans v. Eaton, 20 U.S. (7 Wheat) 356, 430–33 (1822). However, as will be discussed below, a patent's claims have taken over this task.

written description requirement "guards against the inventor's overreaching" by having the specification describe the full breadth of her "original creation" at the time of filing.[61] "Although [the patentee] does not have to describe exactly the subject matter claimed, . . . the description must clearly allow persons of ordinary skill in the art to recognize that [the patentee] invented what is claimed."[62]

The written description requirement, therefore, requires the patentee to provide the public with certain invention-specific information. The patentee must put enough information in the specification to show that she was in possession of the patented invention as of the filing date.[63] As a result, the specification teaches the public about what the patentee considers to be her invention. The written description requirement also supplies a person of ordinary skill in the art with the boundaries of what subject matter the patentee may assert she invented.[64]

Patent law also requires the inventor to describe how to make and use the invention in the specification.[65] The specification must enable the invention by disclosing "the manner and process of making and using [the invention], in such full, clear, concise, and exact terms as to enable any person skilled in the art to which [the invention] pertains, or with which [the invention] is most nearly connected, to make and use the same . . . ."[66] The specification must provide the public with enough information to enable the practice of the invention.[67] While the specification need not disclose every possible embodiment of the invention, the specification must provide enough detail to enable a person of ordinary skill in the art to practice the full breadth of what the patentee wishes to protect.[68] The teachings can require some experimentation on the part of skilled artisans, as long as the required amount is not undue.[69]

The enablement requirement is another information producing rule that compels the patentee to provide even more information about the invention in the specification. In order to be enabling, the specification must include enough technical information, and possibly drawings, to show how a skilled artisan can actually implement the claimed invention.[70] The specification may include a list of materials used to make the invention, instructions on how to operate the invention, or descriptions of environments in which the invention should work.

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[61] *See* Rengo Co. v. Molins Mach. Co., 657 F.2d 535, 551 (3d Cir. 1981).

[62] *See In re* Gosteli, 872 F.2d 1008, 1012 (Fed. Cir. 1989).

[63] *See* Lockwood v. Am. Airlines, Inc., 107 F.3d 1565, 1572 (Fed. Cir. 1997) (noting that the written description requirement may be satisfied with "words, structures, figures, diagrams, formulas, etc.").

[64] *See Vas-Cath, Inc,* 935 F.2d at 1560–63.

[65] *See* 35 U.S.C. § 112, para. 1 (2000).

[66] *Id.*

[67] *See* Engel Indus., Inc. v. Lockformer Co., 946 F.2d 1528, 1533 (Fed. Cir. 1991).

[68] *See id.*; AK Steel Corp. v. Sollac, 344 F.3d 1234, 1241 (Fed. Cir. 2003); *In re* Wright, 999 F.2d 1557, 1561 (Fed. Cir. 1993).

[69] *See In re* Wright, 999 F.2d at 1561; *In re* Wands, 858 F.2d 731, 737 (Fed. Cir. 1988).

[70] *See* CFMT, Inc. v. Yieldup Int'l Corp., 349 F.3d 1333, 1338 (Fed. Cir. 2003).

The enablement requirement creates a specification that teaches those other than the patentee how to actually practice the invention. In addition, the enablement requirement causes the specification, in most cases, to contain specific examples—embodiments—of the invention.[71]

Finally, the best mode requirement mandates that the patent applicant include the best mode of practicing the patented invention contemplated by the inventor at the patent's filing date.[72] This rule prompts the disclosure of further information by the patentee about the invention. If she has a best way of practicing her invention, she must share that information with the public through the specification.[73]

All three of these information producing rules work together to create a patent specification that is rich with invention-specific information. The requirements ask the inventor to provide this information about her invention for the world to see. The specification must describe the invention, in accordance with the written description requirement, enable its use, in accordance with the enablement requirement, and announce the best way of implementing it, in accordance with the best mode requirement. These requirements ensure that the specification contains a textual description of the patentee's invention and enough technical information to enable the use of the patentee's invention.

The specification also usually includes additional invention-specific information. The specification frequently includes a background of the invention.[74] This background section describes the problem the patented invention addresses and any prior attempts to solve the same or similar problems. The specification also includes a summary of the invention indicating the invention's nature, substance, and purpose.[75] After this background and overview, the specification provides a detailed description of the invention.[76] In this detailed description, the patentee sets forth specific embodiments of the invention—working examples or uses of the patent invention. This detailed description is supplemented with drawings.[77] These drawings can consist of detailed figures, flowcharts, or diagrammatic views of the invention and any described embodiments.[78] An appendix can follow the specification, including, for example, tables of data, computer code, or "sequence listings" for genetic inventions.[79]

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[71] While most patents include working examples to enable the patented invention, such examples are not explicitly required. *See In re* Borkowski, 422 F.2d 904, 908 (C.C.P.A. 1970).

[72] *See* 35 U.S.C. § 112, para. 1 (2000) ("The specification . . . shall set forth the best mode contemplated by the inventor of carrying out his invention."); Eli Lilly & Co. v. Barr Labs., Inc., 251 F.3d 955, 963 (Fed. Cir. 2001).

[73] *See id.*

[74] 37 C.F.R. § 1.77(b)(5) (2003).

[75] 37 C.F.R. § 1.73 (2003).

[76] 37 C.F.R. § 1.77(b)(8) (2003).

[77] 37 C.F.R. § 1.81 (2003).

[78] 37 C.F.R. § 1.81(a)–(b) (2003).

[79] 37 C.F.R. § 1.77(b)(4) (2003).

The information about the invention conveyed by the specification does not end with the specification's actual text and drawings. The specification is written to a particular audience—a person having ordinary skill in the art.[80] This individual brings her knowledge and skill to bear when reading the specification. A description of one way to implement the invention may disclose a multitude of variations to a skilled artisan.[81] For example, if the specification literally describes how to design a widget with wood, that specification may actually teach a skilled artisan how to implement the invention in other materials in addition to wood, such as synthetic laminates or even steel. The extent of the specification's teachings about the invention are limited by its contents combined with the knowledge and skill of a person with ordinary skill in the relevant art.[82]

Finally, all of this information in the specification is provided under a "duty of candor and good faith dealing with the [USPTO]."[83] Rules of procedure before the USPTO require the inventor and others associated with the patent application, such as the patent attorney, to be truthful in their dealings with the USPTO.[84] If the patentee makes a material misrepresentation or omission of a material fact with the intent to deceive, then she has engaged in inequitable conduct before the USPTO and her patent is unenforceable.[85] Thus, the requirements to produce information regarding the invention set forth in § 112 are further enforced through the duty of candor requirements in place in the USPTO. Not only does the patentee need to provide specific information regarding her invention in the specification, that information must be truthful and not misleading. In addition, in light of new patent office rules, the applicant may be asked to provide other information related to the invention.[86]

Figure 1, below, depicts the specification's teachings about the invention as a result of patent law's information producing rules. Notably, the "literal specification"—what the specification exactly says and shows—is supplemented with the skill in the art as of the patent's filing date.[87] This additional knowledge expands the teachings of the specification about the invention, creating what can be termed the "constructive specification." This constructive specification embodies the full extent of the specification's

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[80] *See supra* note 58.

[81] *See In re* Howarth, 654 F.2d 103, 105 (C.C.P.A. 1981) ("An inventor need not, however, explain every detail since he is speaking to those skilled in the art.").

[82] *See In re* Gay, 309 F.2d 769, 774 (C.C.P.A. 1962) (noting the appreciation by one skilled in the art of aspects of the specification not explicitly disclosed).

[83] 37 C.F.R. § 1.56 (2003).

[84] *See id.*

[85] *See* Hoffmann-La Roche, Inc. v. Promega Corp., 323 F.3d 1354, 1359 (Fed. Cir. 2003). A fact is material if it is material to an issue of patentability. *See* 37 C.F.R. § 1.56(b) (2003).

[86] *See* 37 C.F.R. § 1.105 (2003).

[87] *See In re* Wertheim, 541 F.2d 257, 262 (C.C.P.A. 1976) (noting that the specification teachings are frozen as of the patent's filing date).

While not visually depicted in Figure 1, the specification's literal teachings are also supplemented with experimentation by the skilled artisan that is not undue. *See* AK Steel Corp. v. Sollac, 344 F.3d 1234, 1244 (Fed. Cir. 2003).

information about the invention and is, accordingly, labeled the "disclosed invention."

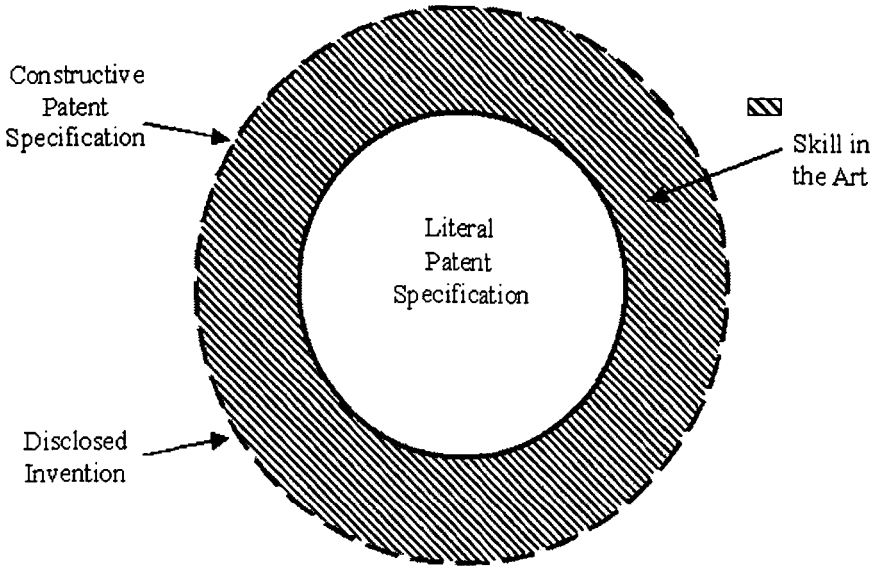

Figure 1

B. Claim-Related Information Producing Rules

Patent law also requires the inventor to conclude her patent with one or more patent claims.[88] The claim is a single sentence in which the patentee must "particularly point[] out and distinctly claim[] the matter which the applicant regards as his invention."[89] The patent claim is where the inventor must tell the world the exact contours of the invention over which she wishes protection. The claim is meant to provide boundary information regarding the invention. Instead of informing the public generally about the invention or how to make or use the invention, the claim attempts to define only the invention. The specific definition of the protected invention is set forth in the patent's one or more claims.

The requirement for a patent claim is relatively new when compared to the age of the specification requirements discussed above and the patent system itself.[90] The early patent statutes of 1790 and 1793 did not explicitly require a

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[88] *See* 35 U.S.C. § 112, para. 2 (2000); 37 C.F.R. § 1.75(a) (2003).

[89] 35 U.S.C. § 112, para. 2.

[90] *See* William Redin Woodward, *Definiteness and Particularity in Patent Claims*, 46 MICH. L. REV. 755, 757 (1948); *see also* Karl Lutz, *Evolution of the Claims of the U.S. Patents* (Part I), 20 PAT. OFF. SOC'Y 134 (1938).

claim.[91] Before the modern patent claim was introduced, courts defined the scope of patent rights by discerning the "principle" or "essence" of the invention from the description in the specification.[92] Any understanding of the full scope of the patentee's protected invention was taken solely from the drawings and text in the patent's specification. This inquiry was often recognized as a point of intrinsic difficulty.[93] As a result of this inquiry, juries would sometimes erroneously find that the patentee was trying to gain protection over things that had already been done, invalidating the patent.[94] In other instances, some juries would improperly find the patent limited to the particulars of the embodiments set forth in the patent's specification, severely narrowing the protected invention.[95]

Under the specification-only system, both the patentee and the public were unable to easily and consistently define the specific invention the patent protected.[96] The specification provided information on the invention, but failed to provide the information in such a way as to define the exact contours of the invention the patentee wished to protect. The specification contained little information regarding the invention's borders. The invention a patentee wished to protect was sometimes broader than the specific examples in the specification, but could not exclusively include aspects of the invention that had already been done or were obvious.[97] The specification does not, by design, delineate the exact boundaries of the protected invention. The specification-only model proved to be an inadequate way to successfully define the protected invention.

The Patent Act of 1870 changed the claiming requirements, specifying that the patentee needed to claim her invention distinctly and with particularity.[98] The 1870 Act prompted patentees to engage in "peripheral claiming."[99] "Peripheral claiming" involves the use of claims to "mark[] out the periphery or boundary of the area covered by the claim."[100] The patent claim was seen as a means though which the patentee could recite the specific metes and bounds of the patented invention.[101] The emphasis shifted from the specification to the claim to define the scope of patent protection.

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[91] *See* Woodward, *supra* note 90, at 758; *see also* Act of April 10, 1790, ch. 7, § 2, 1 Stat. 109, 110; Act of 1793, ch. 11, §§ 1, 3, 1 Stat. 318, 318–321.

[92] *See* Odiorne v. Winkley, 18 F. Cas. 581, 582 (C.C.D. Mass, 1814) (No. 10,432).

[93] *See id.*

[94] *See* John F. Duffy, *The* Festo *Decision and the Return of the Supreme Court to the Bar of Patents*, 2002 SUP. CT. REV. 273, 309.

[95] *See id.*

[96] *See id.* at 309–10 (discussing this difficulty in the early 1800's).

[97] *See id.* at 310–11.

[98] Act of July 8, 1870, ch. 230, § 26, 16 Stat. 198, 201.

[99] *See* RIDSDALE ELLIS, PATENT CLAIMS §§ 4–5 (1949).

[100] *Id.*

[101] *See* Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839, 844 (1990) ("Claims define what the inventor considers to be the scope of her invention, the technological territory she claims is hers to control by suing for infringement.").

The patent claim, therefore, was introduced to provide a specific type of information about the invention—boundary information. The onus is placed on the inventor to tell the world exactly where her invention begins and ends. The claim is meant to reduce the confusion as to the aspects of the invention over which the patentee is asserting protection.[102] Put another way, the claim identifies those aspects of the patentee's invention she wishes to protect. The claim's purpose is to focus the reader on what, exactly, the patent covers.

IV. USE OF INFORMATIONAL SOURCES IN CLAIM INTERPRETATION

While claims provide information on the boundaries of patent protection, claims by themselves, without any further evaluation, fail to fully convey these boundaries to those who need to use them to make patent decisions. As previously noted, the definition of the protected invention is needed to make most determinations regarding the patent grant. Issues of infringement and validity of the patented invention can be resolved only after the exact scope of exclusivity of the patent is determined.[103] While claims are meant to define this exclusivity, they must be interpreted to place them into a "meaningful context" for a given dispute.[104] Words standing alone cannot convey the full meaning of a patent claim.[105] Just as with other legal instruments, claims must be interpreted to be useable by an observer or court.[106] To fully appreciate the scope of protection, the patent claim's meaning must be ascertained.[107]

Claim interpretation, also known as claim construction, is the defining of a claim's terms in order to get the exact meaning of the claim.[108] Once a claim's meaning is determined, the exact location of the patent's metes and bounds are known and issues of infringement or validity can be determined.[109] Claim

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[102] *See, e.g.*, Giles S. Rich, *The Extent of the Protection and Interpretation of Claims—American Perspectives*, 21 INT'L REV. INDUS. PROP. & COPYRIGHT L. 497, 499, 501 (1990) ("[T]he function of claims is to enable everyone to know, without going through a lawsuit, what infringes the patent and what does not.").

[103] *See* Scott R. Boalick, *Patent Quality and the Dedication Rule*, 11 J. INTELL. PROP. L. 215, 228 (2004).

[104] R. Polk Wagner & Lee Petherbridge, *Is the Federal Circuit Succeeding? An Empirical Assessment of Judicial Performance*, 152 U. PA. L. REV. 1105, 1117 (2004); *see also* Cass R. Sunstein, *Principles, Not Fictions*, 57 U. CHI. L. REV. 1247, 1247 (1990) ("The meaning of any 'text' is a function not of the bare words, but of its context and the relevant culture.").

[105] *See, e.g.*, Autogiro Co. of Am. v. United States, 384 F.2d 391, 396 (Ct. Cl. 1967) ("Claims cannot be clear and unambiguous on their face."); Kitch, *supra* note 4, at 268 (noting that a claim is "an abstraction and generalization").

[106] *See* Nard, *supra* note 29, at 2–3 (relating claim interpretation to other types of legal interpretation such as contract and statutory interpretation).

[107] *See* Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1454 (Fed. Cir. 1998) (en banc); Wagner & Petherbridge, *supra* note 104, at 1117–20.

[108] *See* Markman v. Westview Instruments, Inc., 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996) (stating that the first step in the infringement analysis is "commonly known as claim construction or interpretation").

[109] *See* Markman v. Westview Instruments, Inc., 517 U.S. 370, 373–74 (1996) ("Victory in an infringement suit requires a finding that the patent claim 'covers the alleged infringer's product or process,' which in turn necessitates a determination of 'what the words

interpretation is, therefore, the first step in any patent inquiry.[110] Interpreting claim terms is the starting point for resolving most patent issues.[111] And, in most instances, claim interpretation is also the stopping point. Claim interpretation is outcome determinative in most patent cases.[112]

Thus, while claims provide boundary information regarding the protected invention, this boundary information must be processed further to fully appreciate the scope of the invention. A claim interpretation methodology—a way of interpreting the patent claim—must be employed to understand the limits of protection. More information must be gathered and processed than just a reading of the patent claim. Ways of construing claims can differ, and these differences center around what information can be used and how it is used to determine a claim's meaning.

The current methods of interpreting patent claims find their roots in the Supreme Court's decision in *Markman v. Westview Instruments, Inc.*[113] In that case, the Supreme Court held that matters of claim interpretation are in the sole province of the court.[114] From there, the Federal Circuit, the exclusive court for patent appeals,[115] has interpreted claims de novo, starting anew when reviewing any question as to a claim's meaning.[116] This has allowed the court to focus on

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in the claim mean.'") (quoting H. Schwartz, PATENT LAW AND PRACTICE 80 (2d ed. 1995)); McGinley v. Franklin Sports, Inc., 262 F.3d 1339, 1347 (Fed. Cir. 2001); Amazon.com, Inc. v. Barnesandnoble.com, Inc., 239 F.3d 1343, 1351 (Fed. Cir. 2001) (noting that claim construction is the first step in a validity analysis).

[110] *See Cybor Corp.*, 138 F.3d at 1454.

[111] *See* Wagner and Petherbridge, *supra* note 104, at 1119 (noting that, while still a matter of debate, "it is clear that claim construction plays a major—and perhaps *the* major—role in patent infringement litigation"); Nard, *supra* note 29, at 4 (noting that claim interpretation "lies at the heart of our patent system").

[112] *See Markman*, 52 F.3d at 993 (Mayer, J., concurring) ("Where the parties do not dispute any relevant facts regarding the accused product . . . but disagree over possible claim interpretations, the question of literal infringement collapses into claim construction and is amenable to summary judgment."); Gen. Mills, Inc. v. Hunt-Wesson, Inc., 103 F.3d 978, 983 (Fed. Cir. 1997).

It is not uncommon for parties to stipulate to the outcome of issues of infringement or validity once a court issues its claim interpretation. *See* Housey Pharm., Inc. v. Astrazeneca UK Ltd., 366 F.3d 1348, 1349–50 (Fed. Cir. 2004) (indicating that the patentee stipulated that if the district court's construction "were not reversed or modified on appeal, its patents would be invalid and not infringed"). In fact, a court's claim construction prompts settlement in most patent cases. *Markman* Subcomm. of the Patent Litig. Comm. of the Am. Intellecutal Prop. Law Ass'n, *The Interpretation of Patent Claims*, 32 AIPLA Q. J. 1, 5 (2004) ("Given the great impact claim construction may have on the outcome of a case, the court's construction of the claims of a patent may be case dispositive or drastically affect the prospect of settlement.").

[113] 517 U.S. 370 (1996).

[114] *See id.* at 372.

[115] *See* 28 U.S.C. § 1295(a) (2000). This exclusive appellate jurisdiction, particularly over cases where the only patent claim is in a counterclaim, has come into question since the Supreme Court's decision in *Holmes Group, Inc. v. Vornado Air Circulation Systems, Inc.*, 535 U.S. 826 (2002). *See, e.g.*, Christopher A. Cotropia, *"Arising Under" Jurisdiction and Uniformity in Patent Law*, 9 MICH. TELECOMM. & TECH. L. REV. 253 (2003).

[116] *See* Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1454–55 (Fed. Cir. 1998).

the particulars of claim interpretation.[117] Since the *Markman* decision, questions concerning claim interpretation methodologies have centered on the use of information in the specification and use of outside resources such as dictionaries to define claim terms.[118] The Federal Circuit has recently taken the issue of claim interpretation methodology en banc in *Phillips v. AWH Corp.* in an attempt to identify a single approach.[119]

A. Claim Language's Use in Claim Interpretation

Any interpretation process must start with the claim language. The claim defines the protected invention, and in turn, frames any discussion over its own meaning.[120] The claim is the initial focal point for any observer attempting to determine the range of protection a patent gives its owner. Almost all claim interpretation methodologies begin with the claim's language.

The claim language's major role in interpretation is further established because it is considered "intrinsic evidence."[121] Intrinsic evidence is evidence that is unique to the patent under construction and available to the public.[122] It is, in other words, intrinsic to the patent being interpreted.[123] The words of the claims are a classic example of intrinsic evidence—being in the patent, and, in fact, in the claim, being interpreted and available to the public. The claim language should, therefore, play a role in the claim's interpretation.[124]

However, rarely does claim language, by itself, define the invention in such a way as to resolve patent questions.[125] For example, in a recent Federal Circuit decision, *E-Pass Technologies, Inc. v. 3Com Corp.*, the claim term in

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[117] *See* Wagner & Petherbridge, *supra* note 104, at 1122–24 (concluding that the Supreme Court's decision in *Markman* mandated the Federal Circuit to develop legal rules to govern the process of claim interpretation).

[118] *See id.* at 1133–36 (noting two different approaches to claim interpretation—the holistic and procedural approach—that differ in their use of the specification and outside definitional sources); *see also* James R. Barney, *In Search of "Ordinary Meaning,"* 85 J. PAT. & TRADEMARK OFF. SOC'Y 101, 105–06 (2003); John M. Romary & Arie M. Michelsohn, *Patent Claim Interpretation After* Markman*: How the Federal Circuit Interprets Claims*, 46 AM. U. L. REV. 1887, 1897–1926 (1997). The two approaches, to a lesser extent, differ in their usage of the patent's prosecution history. The use of the prosecution history in claim interpretation and the associated information costs are beyond the scope of this Article.

[119] *See* Phillips v. AWH Corp., 376 F.3d 1382, 1383 (Fed. Cir. 2004) (en banc) (per curiam) ("*Phillips II*"). This would, potentially, rectify the current divide among the Federal Circuit's opinions on the methodology to apply when interpreting patent claims. *See* Wagner & Petherbridge, *supra* note 104, at 1171–74.

[120] *See* Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996).

[121] *See id*; *see also* Bell Communications Research, Inc. v. Vitalink Communications Corp., 55 F.3d 615, 620 (Fed. Cir. 1995).

[122] *See* Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 (en banc), *aff'd*, 517 U.S. 370 (1996).

[123] *See Vitronics Corp.*, 90 F.3d at 1582.

[124] *See id.* (noting the general bias towards using intrinsic evidence to interpret the patent claim).

[125] *See supra* notes 104–107.

question was "card."[126] The patent at issue described "an electronic multifunction card comprising a storage accommodating a plurality of individual data sets representing individual single-purpose cards."[127] The dispute focused on whether the alleged infringer's "Palm Pilot" device, a personal data assistant, is a "card."[128] In order to resolve the dispute, the term "card" needed to be given a definition. Did "card" simply mean something that is flat, rectangular, and stiff, or, did card refer to something of the standard dimensions of a credit card, or other specific type of card?[129] More information must be gathered and processed in order to give a claim term, such as "card" in *E-Pass Technologies, Inc. v. 3Com Corp.*, enough meaning to resolve the particular dispute at issue.[130]

B. Specification's Use in Claim Interpretation

The specification accompanying the claim being interpreted is also considered intrinsic evidence.[131] A specification is intrinsic because, by statutory requirement, it must accompany the patent claims, and it, like the claim, is available for the public to view.[132] The specification is also required, as discussed above, to contain information about the same invention the claims define.[133] As such, the specification is an eligible source from which a claim's meaning can be discerned.[134]

However, when and how the specification is used during claim interpretation is the focus of much debate. There are two prevailing views on the specification's use during the claim construction process.[135] One method of interpretation looks at the whole specification early in the definitional process.[136] The teachings regarding the invention in the specification are examined near the beginning of the interpretation process to gain a better understanding of the invention, and this understanding is used to define the

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[126] 343 F.3d 1364, 1365 (Fed. Cir. 2003).

[127] *Id.* (quoting patent in dispute's specification).

[128] *See id.* at 1366 (indicating that the complete claim language at issue was "electronic multi-function card").

[129] *See id.* at 1367–1371 (examining the dispute between these two competing definitions and picking the former).

[130] *See, e.g., id.* at 1367–68 (looking at some outside definitional sources—*Merriam-Webster's Collegiate Dictionary* (10th ed. 1999), *Random House Webster's Unabridged Dictionary* (2d ed. 1998), and *The Oxford English Dictionary*, (2d ed. 1989)—to aid in the court's interpretation of the disputed claim term).

[131] *See* Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996); Autogiro Co. of Am. v. United States, 384 F.2d 391, 397–98 (Ct. Cl. 1967).

[132] *See* 35 U.S.C. § 112, para. 1 (2000).

[133] *See supra* notes 55–87.

[134] *See* Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 (en banc), *aff'd*, 517 U.S. 370 (1996).

[135] These views apply in a similar fashion to the use of the prosecution history by the two current methodologies.

[136] This method of interpretation has been termed the "holistic approach." *See* Wagner & Petherbridge, *supra* note 104, at 1133, 1135–36; Barney, *supra* note 118, at 105–08.

disputed claim term.[137] In contrast, another method of construction has a very narrow view of the specification's role in defining claim terms.[138] The specification is referenced late in the interpretation process and is inspected only to see if there are explicit definitions or disclaimers concerning the claim term.[139] The two contrasting methods have very different views on the specification's role in defining claim language.[140]

These distinct uses of the specification can be traced back to two often recited canons of claim interpretation.[141] One canon requires that claims be interpreted in light of their accompanying specification.[142] Another canon instructs that limitations from the specification cannot be read into the claims.[143] A method of interpretation that considers the specification as a whole, early in the process, stays true to the former canon. By considering the whole specification every time a claim is interpreted, the methodology ensures that claims are defined in light of the teachings in the specification.[144] In contrast, a method that uses information in the specification sparingly and in limited circumstances, focuses on the latter canon. This method shies away from using the specification to define the claim at all, to ensure that limitations from the specification are not inappropriately read into the claim's meaning.[145]

The facts in the current en banc case of *Phillips v. AWH Corp.* provide a perfect example of the different uses of the specification described above. In the underlying Federal Circuit's panel decision in *Phillips v. AWH Corp.* ("*Phillips I*"), the specification played a major role in the claim's interpretation.[146] The patent at issue in *Phillips I* concerned modular wall

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[137] *See, e.g.*, Wang Labs., Inc. v. Am. Online, Inc., 197 F.3d 1377, 1381–83 (Fed. Cir. 1999) (demonstrating this use of the specification in claim interpretation).

[138] This method of interpretation has been termed the "procedural approach." *See* Wagner & Petherbridge, *supra* note 104, at 1133–35; Barney, *supra* note 118, at 105–08. Others have called this method the formalistic approach. *See* Ruoyu Roy Wang, Note, Texas Digital Systems v. Telegenix, Inc.: *Toward a More Formalistic Patent Claim Construction Model*, 19 BERKELEY TECH. L.J. 153, 165 (2004).

[139] *See, e.g.*, E-Pass Techs., Inc. v. 3Com Corp., 343 F.3d 1364, 1367–71 (Fed. Cir. 2003); Tex. Digital Sys., Inc. v. Telegenix, Inc., 308 F.3d 1193, 1201–06 (Fed. Cir. 2002) (demonstrating this use of the specification in claim interpretation).

[140] *See* Wagner & Petherbridge, *supra* note 104, at 1133.

[141] *See id.*

[142] *See* Microsoft Corp. v. Multi-Tech Sys., Inc., 357 F.3d 1340, 1347–48 (Fed. Cir. 2004) ("[T]he claims must be interpreted in light of the specification.").

[143] *See* Johnson Worldwide Assocs. v. Zebco Corp., 175 F.3d 985, 989–90 (Fed. Cir. 1999) ("[C]laim terms cannot be narrowed by reference to the written description or prosecution history unless the language of the claims invites reference to those sources."); Locite Corp. v. Ultraseal Ltd., 781 F.2d 861, 867 (Fed. Cir. 1985) ("Generally, particular limitations or embodiments appearing in the specification will not be read into the claims.").

[144] *See* Wang Labs., Inc. v. Am. Online, Inc., 197 F.3d 1377, 1381–83 (Fed. Cir. 1999).

[145] *See* Tex. Digital Sys., Inc. v. Telegenix, Inc., 308 F.3d 1193, 1204 (Fed. Cir. 2002) ("Consulting the written description and prosecution history as a threshold step in the claim construction process, before any effort is made to discern the ordinary and customary meanings attributed to the words themselves, invites a violation of our precedent counseling against importing limitations into the claims.").

[146] *See* Phillips v. AHW Corp., 363 F.3d 1207, 1212–14 (Fed. Cir. 2004) ("*Phillips I*"), *vacated by* 376 F.3d 1382 (Fed. Cir. 2004) (en banc).

panels that are resistant to fire, sound, and impact.[147] These modular panels are used to construct detention facilities, such as jails, as well as vaults or safety barriers.[148] The claim term in dispute was "baffles"—structures that reside inside the steel shell making up the claimed modular panel walls.[149]

The majority concluded that the term "baffles" used in the asserted claim included only baffles angled in relation to the steel shell at other than 90 degrees.[150] The court focused on the specification early in the interpretation process.[151] In particular, the court focused on descriptions in the specification of the baffles "disposed at such angles that bullets which might penetrate the outer steel panels are deflected."[152] The majority also relied on the patent's drawings, depicting the baffles "disposed at angles which tend to deflect the bullets," to come to its conclusion.[153] As the court articulated, "[i]t is impossible to derive anything else from the specification."[154] The court further noted that the patent's specification does not depict or describe the baffles at a 90 degree angle—an angle that cannot deflect projectiles directed at the building module.[155]

The dissent applied a different claim interpretation methodology, one limiting the specification's use during interpretation. The dissent was very careful to not let the specification influence its definition of the claim term "baffles." It examined the specification through a heavily filtered lens, looking only to see if "the patentee, acting as his own lexicographer, gave a special meaning to the term baffles," or if the patentee affirmatively disclaimed any portion of the term's ordinary meaning.[156] The dissent found nothing to indicate that the patentee affirmatively redefined the term "baffles" to be limited to baffles oriented at angles other than 90 degrees.[157] In addition, the dissent found no disclaimer as to any part of the ordinary meaning in the specification.[158] Instead, as will be discussed in detail below, the dissent

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147 *See id.* at 1209 (citing the patent at issue).

148 *See id.*

149 *See id.* at 1210–11.

150 *See id.* at 1214 (using the holistic approach to claim interpretation).

151 *See id.*

152 *See id.* (quoting the patent's specification).

153 *See id.* (pointing in particular to Figures 6 and 12 of the patent, which are described as showing the angular nature of the baffles that deflects bullets that penetrate the steel shell of the invented building panels).

154 *See id.* at 1213–14 (majority noting that the patentee stated, at the end of the specification that the "'invention has advanced the art by providing modular buildings and modules of high strength [and] bullet resistance,' adding that '[u]niquely the advantages of steel shell modules are combined with thermal and acoustical isolation of two spaced walls and protection against *bullet penetration of the walls*'" (quoting the patent and adding emphasis)).

155 *See id.* at 1213–14.

156 *Id.* at 1217 (Dyk, J., dissenting in part) (using the procedural approach to claim interpretation).

157 *Id.*

158 *Id.* at 1218–19.

focused on a dictionary definition of the term "baffles," and adopted it as the claim term's meaning.[159]

The two approaches to claim interpretation demonstrated by the majority's and dissent's opinions in *Phillips I* are the two prevailing methods of using the specification during claim interpretation.[160] The first approach primarily looks to the specification to gain its understanding of the invention and, in turn, define the claim term in dispute. The second approach rarely uses the specification to define claim terms, using information in the specification in limited instances where the patentee either explicitly defines a claim term or affirmatively disclaims particular subject matter. The very different views of the specification's role during the claim interpretation process are accompanied by very different views on the use of external sources to interpret claim terms—particularly, the use of dictionaries and other definitional sources.

C. *Dictionary's Use in Claim Interpretation*

Sources falling outside the patent's public record are considered "extrinsic evidence."[161] Extrinsic evidence includes, for example, expert testimony, inventor testimony, scientific articles, technical treatises, and dictionaries.[162] These sources may be relevant to the patent's field of technology.[163] They are not, however, specific to the patent, and, thus, are not intrinsic.[164]

The focus on the use of extrinsic sources such as dictionaries in claim interpretation has increased as of late.[165] Just as there are different perspectives on the use of the specification in claim interpretation, there is also a current division on the use of dictionaries, and related definitional sources, in claim interpretation.[166] Methodologies that use the specification extensively to interpret claims do not often turn to dictionaries to define claim terms.[167] Dictionaries may be referenced, but the specification is the first place examined to discern a claim term's meaning.[168] In contrast, those methodologies that rarely use the specification demonstrate an increased reliance on dictionaries to

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[159] *Id.*

[160] *See* Wagner & Petherbridge, *supra* note 104, at 1133–36; 1172–73 (noting that the procedural approach, the methodology used by the dissent in *Phillips I*, is currently the more prevalently used approach by the Federal Circuit).

[161] *See* Pall Corp. v. Micron Separations, Inc., 66 F.3d 1211, 1216 (Fed. Cir. 1995).

[162] *See* Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1583 (Fed. Cir. 1996).

[163] *See id.*

[164] *See id.*

[165] While the proceeding discussion focuses on the use of dictionaries, other extrinsic sources such as expert testimony can be used during claim interpretation. *See id.* However, their use is limited by the canon of interpretation that restricts the reference to extrinsic evidence to instances where the claims are still ambiguous after referring to all of the intrinsic evidence. *See id.*

[166] The term "dictionary" will be used in this Article to refer to all external definitional sources, including such sources as treatises.

[167] *See* Wagner & Petherbridge, *supra* note 104, at 1133, 1135–36.

[168] *See, e.g.*, Microsoft Corp. v. Multi-Tech Sys., Inc., 357 F.3d 1340, 1347–49 (Fed. Cir. 2004) (focusing on the teachings of the specification, not a dictionary definition, to construe the claim language).

obtain claim meaning.[169] In fact, such methodologies employ a "heavy presumption" in favor of a claim's ordinary meaning, and they determine this ordinary meaning from a dictionary or other external definitional source.[170] A dictionary is referenced first, before the specification is even considered, to determine the ordinary meaning.[171]

The *Phillips I* case can again be used to demonstrate the different approaches' use of dictionaries in claim interpretation. The majority mentioned the dictionary definition of the claim term in dispute: "baffles."[172] However, the majority then immediately turned its focus to the specification and the teachings contained therein about the invention.[173] The dictionary definition was not the focal point of the majority's claim interpretation analysis, nor did the majority mention a "heavy presumption" in favor of one type of evidence over another. The majority based its ultimate interpretation of the term "baffles" on the specification's teachings.[174]

In contrast, the first step the dissent took in interpreting "baffles" was to identify the term's ordinary meaning.[175] The dissent turned to a dictionary to ascertain this meaning, using the 2002 edition of *Webster's Third New International Dictionary*.[176] The dissent would only stray from this dictionary definition if there is enough "evidence" to overcome the heavy presumption in favor of it.[177] The dissent found no evidence, such as an explicit definition or affirmative disclaimer, to overcome the presumption.[178] As the dissent articulated its methodology,

> Since there is no argument here that one of skill in the art would ascribe a specialized meaning to the term baffles, and there has been no disclaimer in the specification or prosecution history, the general purpose dictionary definition, 'something for deflecting, checking, or otherwise regulating flow,' *Webster's* at 162, applies.[179]

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[169] *See* Wagner & Petherbridge, *supra* note 104, at 1133–35; Wang, *supra* note 138, at 163–65.

[170] *See* Tex. Digital Sys., Inc. v. Telegenix, Inc., 308 F.3d 1193, 1201–05 (Fed. Cir. 2002); Johnson Worldwide Assocs. v. Zebco Corp., 175 F.3d 985, 989–90 (Fed. Cir. 1999) (establishing the "heavy presumption in favor of the ordinary meaning of claim language"); Barney, *supra* note 118, at 108–09 (noting that the "heavy presumption" in favor of a claim term's ordinary meaning establishes an evidentiary burden of sorts that must be overcome to allow information from the specification, or other intrinsic sources such as the prosecution history, to influence the claim interpretation).

[171] *See Tex. Digital Sys., Inc.*, 308 F.3d at 1204–05.

[172] *See* Phillips v. AHW Corp., 363 F.3d 1207, 1212 (Fed. Cir. 2004) ("*Phillips I*"), *vacated by* 376 F.3d 1382 (Fed. Cir. 2004) (en banc).

[173] *See id.* at 1212–14.

[174] *See id.* at 1213–14.

[175] *See id.* at 1216–17 (Dyk, J., dissenting in part).

[176] *See id.* at 1216–18.

[177] *See id.* at 1217 (finding no support for adding additional structural limitations to the ordinary meaning of "baffles").

[178] *See id.* at 1217–18.

[179] *Id.* at 1218 (citations omitted).

The questions in the en banc order in *Phillips II* capture the current differences in varying claim interpretation methodologies, particularly, their differing views on uses of information sources. In particular, the questions focus on the use of two interpretative tools—the specification and dictionaries.[180] The first en banc question asks whether "referencing primarily to technical and general purpose dictionaries and similar sources to interpret a claim term or by looking primarily to the patentee's use of the term in the specification" better serves the "public notice function of patent claims."[181] Questions two and three of the en banc order further focus on how the specification and dictionaries are used in claim interpretation.[182] As the questions in the en banc order of *Phillips II* exemplify, the current debate regarding claim interpretation methodology concerns the proper use of the specification and dictionaries when trying to define claim terms.

V. MINIMIZING INFORMATION COSTS DURING CLAIM INTERPRETATION

As evidenced above, there are differing claim interpretation methodologies currently being implemented by the Federal Circuit.[183] This divergence in approach has progressed from the Supreme Court's decision in *Markman*. The *Markman* case allowed the Federal Circuit to focus on the development of claim interpretation methodology by putting interpretation in the province of the court. From there, approaches to interpretation have evolved into two distinct schools of interpretation. The en banc order in *Phillips II* identifies the major difference between the two approaches—their use of the specification and external definitional sources—and asks, essentially: Which is the proper method?[184] The order, therefore, ripens the question as to which approach is superior.

As discussed previously, inventions are intangible, and this intangibility presents significant information costs in the acquisition and processing of invention-related information.[185] Patent law must, however, define the invention in order to provide an incentive to invent and effectively enforce the inventor's exclusivity over the invention.[186] Patent law initially responds to these high information costs by implementing certain information producing rules that require the inventor to both provide information describing and enabling her invention and set forth with particularity the boundaries of her

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[180] The questions include prosecution history estoppel alongside the specification. *See* Phillips v. AHW Corp., 376 F.3d 1382, 1383 (Fed. Cir. 2004) (en banc) (per curiam) ("*Phillips II*").

[181] *Id.*

[182] *Id.*

[183] *See* Wagner & Petherbridge, *supra* note 104, at 1171–74 (noting, empirically, the presence of two different schools of claim interpretation, but with a trend towards the procedural approach).

[184] *Phillips II*, 376 F.3d at 1383.

[185] *See supra* Part II.B–C.

[186] *See supra* Part II.A.

invention.[187] Both of these types of information are contained in the publicly available patent document itself. However, a new set of information costs is introduced—the information costs that must be expended to interpret the patent claim.

The way claims are construed can be evaluated based on the information costs a particular construction approach requires to be expended. An approach that makes it easier for someone to obtain information about the invention's boundaries and process this information to determine the scope of protection is advantageous over those approaches that do not.[188] This is particularly true when dealing with inventions that already have inherently high information costs associated with their definition. Courts should pick a claim interpretation methodology that minimizes net information costs.

A. Full and Early Use of the Specification Minimizes Information Costs

By taking full advantage of the invention-specific information the specification has to offer, methodologies such as those employed by the majority in *Phillips I* minimize information costs. Such methodologies minimize information costs because of the type of information contained in the specification. The specification is required to provide information about the claimed invention.[189] This information is tailored to the invention at issue, thereby providing contextual information for use during claim interpretation. By providing invention-specific, and more particularly, claim-specific information, the specification can help lower the costs associated with understanding the invention defined in the claims.[190]

In addition, the particular type of information in the specification helps overcome the intangibleness of the invention. Patent rules, such as the written description and the enablement requirements, force the inventor to provide the public with specific information about her invention.[191] The patent must describe the extent of the inventor's invention, and it must instruct those skilled in the art on how to make and use the invention. These rules produce a specification that includes, in addition to a general textual description of the invention, drawings depicting different aspects of the invention and descriptions of specific embodiments of the invention—real world

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[187] *See supra* Part III.A–B.

[188] *See, e.g.*, Long, *supra* note 19, at 539–46 (evaluating patent doctrines such as the subject matter requirement under an information costs paradigm).

[189] *See* Enzo Biochem, Inc. v. Gen-Probe, Inc., 323 F.3d 956, 968 (Fed. Cir. 2002) (noting that the specification must "describe the claimed invention so that one skilled in the art can recognize what is claimed"); *In re* Hyatt, 708 F.2d 712, 714 (Fed. Cir. 1983) ("[T]he enabling disclosure of the specification [must] be commensurate in scope with the claim under consideration.").

[190] *See* Long, *supra* note 19, 504–05 (noting how "the patent specification—the document that describes the invention in detail—helps reduce" the burden on observers in "determining the boundaries of protected property"); F. Scott Kieff, *The Case for Registering Patents and the Law and Economics of Present Patent-Obtaining Rules*, 45 B.C. L. Rev. 55, 99 (2003) (noting that "the § 112 disclosure requirements decrease social costs by serving to give clear notice about the property right").

[191] *See supra* Part III.A–B.

implementations of the invention. Such information places the invention in a real world context, describing how the invention is actually fabricated and used in physical space.[192] This type of information adds a tangibleness to the invention—the invention can be considered more like a thing. This additional information allows an interpreter to take advantage of the inventor's reduction of the inventive concept to tangible embodiments and examples in the specification.[193] The cognitive burden placed on an observer when trying to understand the invention is accordingly lowered.[194] An interpreter can, therefore, rely upon her familiarity with physical things to better understand the patented invention.[195]

Furthermore, the information in the specification is easy to find. The cost expended in obtaining the information is almost nil, considering the specification is publicly available and resides in the same document as the claim under interpretation. The specification also stays static after the patent is filed,[196] meaning it is a fixed source of information, further lowering information collecting costs.[197]

The information in the specification is produced by the inventor, the lowest cost source for invention-specific information.[198] The inventor provides this information at the beginning of the patent process, when she applies for a patent.[199] Information about the invention and how it is made and used is just as available to the patent examiner during prosecution as it is to a judge interpreting the claims in litigation. The information is also self-authenticating, considering the patentee is under a duty of candor and good faith when the information is produced.[200] The costs for others to obtain similar information would be tremendous.[201] Patent law places the information producing burdens

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[192] *See* Long, *supra* note 19, at 486 ("Seeing the tangible embodiment of a cotton gin, or a picture of the tangible embodiment of the cotton gin, is a low-cost way of cognizing the concept of the gin-as-a-thing."). Inventions are, in most cases, easier to convey in drawings rather than words. *See* Autogiro Co. of Am. v. United States, 384 F.2d 391, 397 (Ct. Cl. 1967) ("An invention exists most importantly as a tangible structure or a series of drawings. A verbal portrayal is usually an afterthought written to satisfy the requirements of patent law.").

[193] *See* Long, *supra* note 19, at 486–88 (noting how reductionism lowers the information costs associated with comprehending something).

[194] *See id.*

[195] *See id.* at 482–85 (noting how familiarity with physical things reduces information costs).

[196] *See* 35 U.S.C. § 132 (2000) (prohibiting the addition of new matter into the disclosure of the invention after filing). New information can be added to the specification after filing, but this information must be supported by the information already in the specification. *See id.*

[197] There are, however, potential increased costs to the patent applicant to maximize her specification in response to the claim interpretation methodology used by the courts.

[198] *See* Long, *supra* note 19, at 496–98 (discussing allocating informational burdens).

[199] *See* 37 C.F.R. § 1.163 (2003).

[200] *See supra* notes 83–85.

[201] A potential infringer or a competitor may also have information about the invention, or at least information related to the invention, because of their own activities—building or using a product related to the invention. These individuals certainly would not need to expend as much in the way of information costs to understand the invention as a completely

on the individual that will incur the lowest costs in obtaining and providing that information.[202] Using the specification fully and early in the process takes advantage of already produced information by the lowest cost producer—the patentee.

One could argue that the information the specification provides increases information costs by overwhelming the interpreter with too much information. A plethora of information—information overload—can increase information costs.[203] Time and energy are expended to gather all of the information, filter out irrelevant information, and comprehend the remaining information. Such a concern with the patent's specification is not unfounded, with there being no page limits or content limitation on the specification. As long as the patent provides the required information, no statute forbids extraneous information.[204]

However, the claims help focus the interpreter on the relevant information in the specification.[205] As demonstrated in *Phillips I*, the majority looked through the specification with a focus on the claim term at issue, "baffles," and its place in the invention.[206] Without the claims, overload and lack of direction would be a real issue. But the reason claims were introduced in the 1800's was to provide direction and a framework in which the invention could be defined.[207] In addition, the inventor bears information costs of her own in producing such a long and burdensome specification and, therefore, has an incentive to not create a lengthy manifesto. Finally, the USPTO, and particularly the patent examiner, has the discretion to request the patentee streamline the patent's specification.[208] Most likely, in those egregious instances, the USPTO will exercise this authority.

Another potential information cost associated with using the complete specification early in the interpretation process is that it may mislead the interpreter with information having too much specificity. The particular embodiments in the specification may be mistaken as describing the full scope of the invention.[209] That is, the specifics of the examples in the specification

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uninformed observer. However, the knowledge of potential infringers and competitors is still peripheral to the core knowledge of the inventor—the originator of the concept being protected by the patent. The information costs differential may be smaller, but the inventor is still the lowest cost provider of invention-specific information.

[202] *See* Long, *supra* note 19, at 496–98.

[203] *See, e.g.*, Daniel J. Solove, *The Virtues of Knowing Less: Justifying Privacy Protections Against Disclosure*, 53 DUKE L.J. 967, 1035–44 (2003) (indicating that more information can lead to mistakes and misjudgments).

[204] *But see* 37 C.F.R. § 1.56(a)–(b) (2003) (placing on the applicant a duty to not intentionally mislead the USPTO on an issue of patentability).

[205] *See supra* Part III.B.

[206] *See* Phillips v. AHW Corp., 363 F.3d 1207, 1212–14 (Fed. Cir. 2004) ("*Phillips I*"), *vacated by* 376 F.3d 1382 (Fed. Cir. 2004) (en banc).

[207] *See supra* Part III.B.

[208] *See* U.S. PATENT & TRADEMARK OFFICE, U.S. DEP'T OF COMMERCE, MANUAL OF PATENT EXAMINING PROCEDURE § 608.01 (8th ed., rev. 2 May 2004) (noting that the specification must be clear and concise).

[209] *See* Tex. Digital Sys., Inc. v. Telegenix, Inc., 308 F.3d 1193, 1204–05 (Fed. Cir. 2002) ("Consulting the written description and prosecution history as a threshold step in the claim construction process, before any effort is made to discern the ordinary and customary

will trump the boundaries set forth in the patent's claims, and the construer will interpret the claims to be limited to these examples in the specification. The fear of this very thing happening drives the methodology employed by the dissent in *Phillips I*. In fact, the dissent accused the majority of doing just that—improperly limiting the claims to the particular embodiment in the specification.[210]

This fear is well-founded. But a proper understanding of the information the specification provides should quell such fears and ensure an interpreter is not misled.[211] As demonstrated in Figure 1 above, the specification provides more information about the invention than just what is literally present in the text and drawings.[212] The invention-specific information in the specification is filled out with the knowledge and skill of a person having ordinary skill in the relevant art. An understanding of this gloss, applied to the specification's specific teachings, should prevent an unwarranted reading of the specification that improperly limits the claims to the embodiment. In addition, interpreting the information in the specification properly is common for actors in the patent system. Such information already needs to be digested and compared to the patent claims to determine whether the requirements of § 112 are met. Claim interpretation that uses the teachings of the specification takes full advantage of this existing knowledge and practice and, accordingly, lowers information costs. The majority in *Phillips I*, while focused on the specific embodiments, also discussed the extent of the teachings of the specification and concluded that the specification simply does not teach an invention including 90 degree baffles.[213] Such rhetoric demonstrates a proper understanding of what is taken away from the specification; more than the specific embodiments, it is the particular information supplemented with the ordinary skill in the art.

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meanings attributed to the words themselves, invites a violation of our precedent counseling against importing limitations into the claims."); Dave A. Ghatt & Timothy B. Kang, *Claim Interpretation: A Regression to Uncertain Times*, 84 J. PAT. & TRADEMARK OFF. SOC'Y 456, 466–68 (2002) (fearing that resort to the specification will lead to a "slippery slope" of "impos[ing] additional limitations uncalled for by the claims"); Russell B. Hill & Frank P. Cote, *Ending the Federal Circuit Crapshoot: Emphasizing Plain Meaning in Patent Claim Interpretation*, 42 IDEA 1, 22–24 (2002).

[210] *See Phillips I*, 363 F.3d at 1217 (Dyk, J., dissenting in part).

[211] *See* Wagner & Petherbridge, *supra* note 104, at 1176 (noting a strong statistical relationship between the holistic approach and inconsistent application of the approach, "thereby implying that the holistic approach is inherently more difficult for judges to apply in a consistent and predictable manner"); Phillips v. AWH Corp., 376 F.3d 1382, 1382 (Fed. Cir. 2004) (en banc) (per curiam) ("*Phillips II*"). The *Phillips II* en banc decision may decrease this inconsistency, if it better defines how to use the complete specification early in the construction process.

[212] *See supra* Part III.A.

[213] *See Phillips I*, 363 F.3d at 1214 ("Inspection of the patent shows that baffles angled at other than 90° is the *only* embodiment disclosed in the patent; it is the invention. It is impossible to derive anything else from the specification.").

B. A Heavy Presumption in Favor of Dictionary Definitions Introduces Information Costs

In contrast, employing a heavy presumption in favor of a definition taken from a dictionary (hereafter "dictionary methodology"), a source external to the patent document, introduces information costs. The dictionary methodology employed by the dissent in *Phillips I* used such a heavy presumption, and, by doing so, forwent the information cost savings of using the specification fully and early when interpreting claims. In addition, the use of dictionaries introduces information costs of its own.[214]

The heavy presumption distances the claim interpretation process from the specification. As exemplified in the dissent's analysis in *Phillips I*, the specification is viewed later in the interpretation process, and it is viewed through a heavy filter.[215] Only explicit definitions of the claim term or affirmative disclaimers of the term's dictionary definition are considered in interpreting the claim.[216] By using the specification in such a limited way, the methodology squanders information about the invention that the patent laws require the inventor to produce. And this information, as discussed above, gives context and tangibleness to the claim, making it easier to interpret.[217]

The specification's lack of influence in claim interpretation also confuses observers who see invention-specific information but are instructed not to fully use it when determining what is protected. An interpreter is naturally drawn to this invention-rich source, and, by telling them not to fully use it, information costs are introduced. Effort must be expended to discount the specification's information and prevent it from influencing the resulting interpretation.[218] In a sense, it takes energy to not use something that is so native to the subject under interpretation—the invention. Furthermore, the specification's information is already evaluated by most observers to ensure that the § 112 disclosure

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[214] The proceeding analysis, while focusing on dictionaries, also applies in part to the use of other extrinsic evidence, such as expert testimony, during claim interpretation. The information costs associated with the use of such outside evidence are potentially as high as those associated with the use of dictionaries. There are similar search costs associated with finding such external sources that will be relevant to the invention under interpretation. However, in contrast with dictionaries, it may be easier to contextualize the expert testimony because it can be tailored to the claim at issue—the testimony is produced for the given dispute. Furthermore, as long as the canon of interpretation favoring intrinsic over extrinsic evidence is followed, the specification, part of the intrinsic record, will be referenced first and cost savings will still be enjoyed.

[215] *See Phillips I*, 363 F.3d at 1216–18 (Dyk, J., dissenting in part).

[216] *See* Kumar v. Ovonic Battery Co., 351 F.3d 1364, 1368 (Fed. Cir. 2003); Teleflex, Inc. v. Ficosa N. Am. Corp., 299 F.3d 1313, 1325 (Fed. Cir. 2002) ("The patentee may demonstrate an intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope."); Wagner & Petherbridge, *supra* note 104, at 1133–34 (noting that any "alteration from the ordinary meaning must be accompanied by significant proof that such an alteration is required under the circumstances").

[217] *See supra* Part V.A.

[218] *See* Tex. Digital Sys., Inc. v. Telegenix, Inc., 308 F.3d 1193, 1204–05 (Fed. Cir. 2002) (noting that it is natural when the specification is referenced to use that information to interpret the patent's claims).

requirements are met for purposes of validity. It is tough for observers to divorce themselves from the specification.[219]

The use of dictionaries to interpret claims introduces its own set of information costs. First, costs must be expended to find and collect the relevant dictionaries.[220] These costs are expended by both the inventor and observers—those who inherently know less about the invention. Instead of using a source already produced by the lowest cost producer—the specification by the inventor—the use of dictionaries forces parties that know little initially about the invention to collect information, and therefore to incur additional costs.[221] Furthermore, the universe of dictionaries and other definitional sources is virtually unbounded.[222] As noted in Miller and Hilsenteger's recent study, the Federal Circuit has used about seventy different external definitional sources in their opinions on claim construction from April 5, 1995 to June 30, 2004.[223] The number of dictionaries the parties to these cases, and all other actors in the patent system, have referenced during this time period is likely much greater. And each potential definitional source must be found, read, and considered as

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[219] Notably, this argument somewhat supports the fear addressed in Part IV.A, *supra*—that using the specification fully and early in interpretation will cause the claims to be improperly limited to the specific embodiments in the specification. This fear exists, in part, because of the lure the specification has in telling observers what the invention is. However, not completely using the specification, as is done under the heavy presumption approach, truly confuses the observer, while fully using it just requires the observer to understand what the complete teachings of the specification really include.

[220] *See, e.g.*, ACTV, Inc. v. Walt Disney Co., 346 F.3d 1082, 1088–89 (Fed. Cir. 2003) (noting that dictionaries available at the time of the patent and those that likely contain the ordinary meaning of the claim term attributed to it by those of ordinary skill in the art should be used). The Federal Circuit, apparently, may not follow its own instruction, considering that the court usually uses general purpose English language dictionaries, such as *Webster's Third New International Dictionary*. *See* Joseph Scott Miller & James A. Hilsenteger, *The Proven Key: Roles & Rules for Dictionaries at the Patent Office & the Courts*, 54 AM. U.L. REV. (forthcoming May 2005) (manuscript at 25–26, on file with author, *available at* http://ssrn.com/abstract=577262) (noting that "out of the 268 sources used, the court used 189 (70.5%) general purpose English language sources and 79 (29.5%) specialized sources"); *see also Phillips I*, 363 F.3d at 1217–18 (Dyk, J., dissenting in part) (using a general purpose English dictionary); E-Pass Techs., Inc. v. 3Com Corp., 343 F.3d 1364, 1367–68 (Fed. Cir. 2003) (same).

[221] *See* Miller & Hilsenteger, *supra* note 220 (manuscript at 30–43) (noting the many uncertainties introduced under the current use of dictionaries by the Federal Circuit); Jennifer R. Johnson, *Out of Context:* Texas Digital, *the Indefiniteness of Language, and the Search for Ordinary Meaning*, 44 IDEA 521, 526–27 (2004) (critiquing the heavy reliance on dictionaries in claim interpretation); Ben Hattenbach, *Chickens, Eggs and Other Impediments to Escalating Reliance on Dictionaries in Patent Claim Construction*, 85 J. PAT. & TRADEMARK OFF. SOC'Y, 181, 189–90 (2003) (asserting that the use of dictionaries makes the claim interpretation process unpredictable). Miller & Hilsenteger have a potential solution to the dictionary identification problem—requiring patentees to identify the relevant dictionaries for claim interpretation during prosecution. *See* Miller & Hilsenteger, *supra* note 220 (manuscript at 53–54).

[222] *See, e.g.*, Miller & Hilsenteger, *supra* note 220 (manuscript at 25–27).

[223] *Id.* (manuscript at 27) (noting the use of twenty-six general purpose English sources and forty-four specialized sources by the Federal Circuit from April 5, 1995 to June 30, 2004).

to whether it is relevant for the area of technology at issue.[224] The cost of merely collecting information under the dictionary methodology is high.

The costs incurred do not stop at obtaining a proper dictionary, or dictionaries. The dictionary definitions must then be processed and comprehended in the context of the patent claim. Dictionaries rarely have one definition for a particular term—forcing a choice between available definitions.[225] Questions also arise over competing definitions of the same term in different dictionaries.[226] Terms in a dictionary definition may also need to be defined, requiring the expenditure of additional information costs to obtain another definitional source and process the definitions that source provides.[227] Finally, when a definition is decided upon, that definition, set forth in the abstract in the dictionary, must be placed into the context of the patent claim, and, ultimately, the invention at issue; placing it in context is difficult to do.[228] A dictionary definition, unlike the specification, provides little tangibleness, and less contextual tangibleness, to aid in the definition of the invention. A definition is abstract and intangible itself. Thus, a dictionary does not have the same potential as the specification to reduce the interpreter's cognitive burden in grasping the contours of the protected invention. In fact, the definition's abstraction may simply add to the comprehension costs already introduced by the lack of "thingness" of the invention and the inadequacy of claim language alone to articulate the invention.

Arguments can be made that using the dictionary methodology will reduce information costs. The reduction most often referenced is the lowering of cost due to the clear, easy to follow rules the dictionary methodology introduces.[229] The process of interpretation under such a presumption is very formal, with a very clear procedure of interpretation. Courts and other actors in the patent

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[224] *See* Home Diagnostics, Inc. v. Lifescan, Inc., 381 F.3d 1352, 1355 (Fed. Cir. 2004) ("The touchstone for discerning the usage of claim language is the understanding of those terms among artisans of ordinary skill in the relevant art at the time of invention.").

[225] *See, e.g.*, Tex. Digital Sys., Inc. v. Telegenix, Inc., 308 F.3d 1193, 1203 (Fed. Cir. 1999) (noting that "words often have multiple dictionary definitions, some having no relation to the claimed invention"); *see also* Phillips v. AHW Corp., 376 F.3d 1382, 1383 (Fed. Cir. 2004) (en banc) (per curiam) (*"Phillips II"*) (asking in Question 2 "[h]ow does the concept of ordinary meaning apply if there are multiple dictionary definitions of the same term?" and "[i]f the dictionary provides multiple potentially applicable definitions for a term, is it appropriate to look to the specification to determine what definition or definitions apply?").

[226] *See, e.g.*, Nystrom v. Trex Co., 374 F.3d 1105, 1110–12 (Fed. Cir. 2004) (facing different definitions of the term "board" in different dictionaries).

[227] *See, e.g.*, Novartis Pharm. Corp. v. Eon Labs Mfg., Inc., 363 F.3d 1306, 1308–10 (Fed. Cir. 2004) (using a dictionary to define the claim term "hydrosol," then using another dictionary to define the term "sol" appearing in the definition of "hydrosol," and then defining the term "solution" appearing in the definition of "sol").

[228] *See* Sunstein, *supra* note 104, at 1247 ("Because of the context, words sometimes have a meaning quite different from what might be found in *Webster's* or the *Oxford English Dictionary*.").

[229] *See* Wagner & Petherbridge, *supra* note 104, at 1176; Wang, *supra* note 138, at 169–73; *see also* Pierre J. Schlag, *Rules and Standards*, 33 UCLA L. Rev. 379, 386–88 (1985) (noting some of the advantages of using legal rules).

system can easily follow such methodologies and results can potentially be replicated.

The problem with this line of analysis is that the heavy presumption, and more importantly the use of external definitional sources, is not as streamlined and decision-free as it initially appears. As previously discussed, such a methodology requires the court and other actors to choose a dictionary, or multiple dictionaries. From these dictionaries, a single definition must be adopted, with the potential need to resolve dueling dictionary definitions. The adopted definition may also need to be defined, requiring the dictionary definition acquisition process to start over again. Finally, even when a definition is decided upon, it must be placed and understood in the context of the patent claim. And still, the specification is referenced, albeit in a minimal fashion, to see if the patentee affirmatively deviated from the dictionary definition. Any costs saved by using such a "clear" rule with the heavy presumption are likely squandered during the implementation of the presumption. There are many decisions that must be made during the interpretation process under this methodology—decisions that are by no means clear cut.[230] Furthermore, even if the process is cost-saving, such process-oriented savings will not reach the level of savings gained by fully using the specification early in the interpretation process.[231]

C. Using an Information Cost Analysis to Evaluate Claim Interpretation

While the above discussion performs an information cost analysis on the current dominant schools of interpreting patent claims, an information costs analysis is appropriate for any method of defining a patentee's right to exclude. The above analysis concludes that full, early use of the specification during claim interpretation lowers the information costs presented by claim interpretation. In contrast, employing a heavy presumption in favor of the use of dictionaries introduces information costs into the process. While the above focused on specifics, this should not take away from the more general theme of this Article, that an information cost analysis is an appropriate metric for judging claim interpretation methodologies. The definition of an invention presents unique information cost problems. The lower the information costs encountered in defining the scope of the invention, the easier it is for all observers to understand the critical aspect of a patent—the scope of its exclusivity. Claim interpretation is, at its base, an information costs problem and should be judged as such.

Furthermore, the analysis above does not mean that any of the current methodologies completely eliminate the information costs encountered in understanding the extent of the invention. Interpretation still takes effort, and the savings introduced by full and early use of the specification may not be tremendous. This methodology does, however, introduce savings to a process and a subject—the invention—that is rife with information costs. In addition,

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[230] *See* Miller & Hilsenteger, *supra* note 220 (manuscript at 30–43); Johnson, *supra* note 221, at 526–27; Hattenbach, *supra* note 221, at 189–90.

[231] *See supra* Part V.A (detailing the information cost savings under this approach).

defining the patent claim is extremely fundamental to the patent system. Information cost savings presented by a particular claim interpretation methodology, no matter how small in absolute terms, are quite significant in relative terms when judged in context. At the very least, courts do not want to use an interpretation methodology that introduces any additional costs to what is already a very costly system.

Finally, it should be noted that there are potentially other ways claims can be interpreted. Furthermore, alternatives to the current peripheral claiming, such as central claiming,[232] are available to establish the extent of the inventor's right to exclude. These alternative methodologies or claiming theories may reduce information costs even more than the two current ways of claim interpretation analyzed above.

VI. CONCLUSION

Information costs are a factor that should be considered when looking at how claims are interpreted. Any observer of a patent already faces high information costs in understanding the patented invention because of its intangibleness. Patent rules initially respond by forcing the production of invention-specific information by the inventor in the patent document. Observers must, however, further process information about the invention to understand the borders of patent protection. Faced with a situation already having high information costs to all parties involved, the claim interpretation process should minimize any additional information costs. Lower information costs make it easier for any actor in the patent system to comprehend the most crucial aspect of a patent—its area of exclusivity. Those interpretation methodologies that fully use the specification's teachings regarding the invention early in the interpretation process keep costs down. The information in the specification is already tailored to and in context with the claim under interpretation. In addition, the specification provides invention-specific information in a low-cost fashion and includes information that caters to an interpreter's familiarity and ease with understanding "things." Any new interpretation methodology should consider the information costs it imposes on both the patentee and any patent observer, keeping in mind the invention-specific information patent law already requires to be produced.

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[232] Peripheral claiming is the current claiming regime codified in 35 U.S.C. § 112, para. 2 (2000), in which patent claims define the boundaries of the patented invention. Central claiming is the use of a patent claim to define the center, or core, of the patented invention. Ellis explains:

> "There are two general methods of defining an invention—central definition and peripheral definition. Central definition involves the drafting of a narrow claim setting forth a typical embodiment coupled with broad interpretation by the courts to include all equivalent constructions. Peripheral definition involves marking out the periphery or boundary of the area covered by the claim and holding as infringements only such constructions as lie within that area."

ELLIS, *supra* note 99, at § 4.