

**EQUIVALENCY AND PATENT LAW'S POSSESSION PARADOX**

*Timothy R. Holbrook\**

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## I. INTRODUCTION

Many people believe that an inventor receives a patent for a tangible invention, the physically constructed item she has created. A patent can be granted on the complete idea of the invention, as described in the patent document. Nevertheless, the intuition that there is some relationship between what the inventor created and what the patent protects is correct. The patent generally protects what the inventor had in her possession when she filed her patent application. The law, however, affords greater protection under the doctrine of equivalents: even if the device accused of infringing the patent is not exactly the same as what the inventor possessed, the device will still infringe if it is insubstantially different. While this makes sense on its face, the current law has created an odd paradox: the doctrine of equivalents primarily protects later-developed technologies, which are by definition things the inventor did not possess. This "possession paradox" remains unexplained by the courts and underexplored in the literature. This Article seeks to resolve this paradox by looking at this issue through the lens of "possession" and, in particular, constructive possession.

Possession is a central concept in property law.<sup>1</sup> We often assign ownership of an item to the person who first possessed it. As the seminal case of *Pierson v. Post*<sup>2</sup> demonstrates, the metric for determining possession may vary: is the hunter who merely chases a fox in "possession" of the animal, or is the fox "possessed" by the hunter

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1. See generally Carol M. Rose, *Possession as the Origin of Property*, 52 U. CHI. L. REV. 73, 74 (1985) (explaining that "[f]or the common law, *possession* or 'occupancy' is the origin of property").

2. 3 Cai. 175 (N.Y. Sup. Ct. 1805).

who ultimately kills it?<sup>3</sup> According to the clear act principle, possession is established by a clear act or statement that helps ensure notice to the world of the assertion of property.<sup>4</sup> The act is in essence a form of communication that must be understood by the appropriate audience.<sup>5</sup> These declaratory acts provide notice to third parties, reducing the uncertainty surrounding the ownership of the item.

There are times, however, when an interest in certainty gives way to considerations of fairness.<sup>6</sup> For example, a hunter who traps or mortally wounds an animal is the owner, even if someone else later discovers the trapped or wounded animal. Although the hunter did not have actual possession, the law views him as the owner: he has constructive possession of the animal, a legal fiction created to effect fairness. We see a similar dynamic in the theory that a landowner constructively possesses fugitive resources such as wild animals, oil, natural gas, and water, so long as these resources are on the owner's property. Under this doctrine, if a resource runs or flows away, it is no longer the owner's property.<sup>7</sup> The owner likely never had actual possession of the resource, but we consider the owner to have possessed it constructively while the resource remained on her property.

Constructive possession undermines certainty to some extent. For example, someone encountering a wounded animal may not know whether the wound was "mortal" if the animal has yet to succumb to the injury. Of course, if the wound is clearly mortal or the animal is trapped, the finder has negative notice — that the animal is not his but someone else's — but he likely has no idea who is the actual owner. Nevertheless, these constructive possession doctrines serve other policy-driven purposes, such as fairness or the prevention of incidents of trespass.<sup>8</sup> The legal fiction is created to effect other social or policy concerns, even at the expense of certainty.

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3. As anyone who has taken Property knows, it is the latter. See JESSE DUKEMINIER ET AL., PROPERTY 19 (6th ed. 2006).

4. Rose, *supra* note 1, at 77.

5. *Id.* at 78–79.

6. See Carol M. Rose, *Crystals and Mud in Property Law*, 40 STAN. L. REV. 577, 577–78 (1988); cf. Donald S. Chisum, *The Scope of Protection for Patents After the Supreme Court's Warner-Jenkinson Decision: The Fair Protection — Certainty Conundrum*, 14 SANTA CLARA COMPUTER & HIGH TECH. L.J. 1, 6–7 (1998) (“[L]ack of clarity can impede legitimate investment in technology-based products and services. On the other hand, strict and literal adherence to the written claim in determining the scope of protection can invite subversion of a valuable right and substantially diminish the economic value of patents.”); Timothy R. Holbrook, *The Supreme Court's Complicity in Federal Circuit Formalism*, 20 SANTA CLARA COMPUTER & HIGH TECH. L.J. 1, 1 (2003) (“The Federal Circuit increasingly has articulated rules of law to promote certainty, at the expense of fairness.”).

7. See DUKEMINIER ET AL., *supra* note 3, at 29 & n.14, 31–35; Alexandra B. Klass & Elizabeth J. Wilson, *Climate Change and Carbon Sequestration: Assessing a Liability Regime for Long-Term Storage of Carbon Dioxide*, 58 EMORY L.J. 103, 133–34 (2008).

8. In this way, constructive possession acts in a manner akin to proximate cause in tort law, where a party is only liable for the harms of an act that were foreseeable, regardless of whether the act was the cause-in-fact of more distant harms. The difference is that courts

Both actual and constructive possession play integral roles in patent law, although in slightly different forms. The scope of a patent is inextricably tied to what the inventor created or possessed. For example, if I discover a vaccine for cervical cancer, I am not entitled to a patent on vaccines for *all* forms of cancer. I did not invent those other forms and therefore did not possess them. As a result, as in other forms of property, possession is a crucial aspect of determining the party entitled to the patent.

In patent law, however, one does not assess what the inventor created by looking at the physical object that is the subject of the patent right. This stands in contrast to copyright law. The right to exclude an infringing work in copyright law is determined by comparing that work to the copyrighted work.<sup>9</sup> Patent law, on the other hand, requires the inventor to explain in her patent application what the invention is and how to make and use it; the act of communicating possession is part of the requisite *quid pro quo* for obtaining a patent.<sup>10</sup> The inventor communicates to the public what her invention is through the patent document. Accordingly, the key act for invention is not the physical creation of the invention but instead the mental state of having the complete idea of the invention.<sup>11</sup> Indeed, an inventor can obtain a patent even if she has never built a physical embodiment of the invention.<sup>12</sup> Possession is demonstrated through the patent's specification,<sup>13</sup> the part of the patent that requires the applicant to explain the details of her invention so as to guarantee that others can make and

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determine what is foreseeable using a different perspective. For proximate cause, courts ask what is foreseeable to the tortfeasor. For possession purposes, the perspective of the property holder determines foreseeability. In the patent context, this distinction is crucial: in assessing the extent of a patent's right to exclude, the perspective of the patent holder — not the accused infringer — is determinative. Thus, these ideas of possession, not proximate cause, are more appropriate and illuminating.

9. See generally Jeanne C. Fromer, *Claiming Intellectual Property*, 76 U. CHI. L. REV. 719 (2009) (comparing claiming structures in patent and copyright law). In patent law, comparing the device accused of infringing with the patentee's commercial version of the invention is legal error. See, e.g., *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1578 (Fed. Cir. 1984) (“Infringement is determined on the basis of the claims, not on the basis of a comparison with the patentee's commercial embodiment of the claimed invention.”).

10. See 35 U.S.C. § 112, para. 6 (2006).

11. *Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55, 60–61 (1998). “Conception” is a term of art in patent law that requires the “formation in the mind of the inventor, of a definite and permanent idea of the complete and operative invention.” *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1376 (Fed. Cir. 1986) (quoting 1 ROBINSON ON PATENTS 532 (1890)) (internal quotation mark omitted); see Timothy R. Holbrook, *The More Things Change, the More Things Stay the Same: Implications of Pfaff v. Wells Electronics, Inc. and the Quest for Predictability in the On-Sale Bar*, 15 BERKELEY TECH. L.J. 933, 953, 977–78 (2000) (discussing conception, the idea of the invention, versus enablement of a possible physical embodiment of the invention).

12. See *Pfaff*, 525 U.S. at 61; *Dolbear v. Am. Bell Tel. Co. (The Telephone Cases)*, 126 U.S. 1, 535–36 (1887).

13. See Jeanne C. Fromer, *Patent Disclosure*, 94 IOWA L. REV. 539, 550 (2009).

use the invention at the patent's expiry.<sup>14</sup> This disclosure informs the appropriate scope of the patent.

Moreover, patent law affords "constructive possession" of certain creations to a patent owner under the doctrine of equivalents. A patent may cover a device that is not within the literal scope of the claims but is nevertheless deemed similar enough to be covered. The express purpose of this judicially-created doctrine is to ensure fair and adequate protection to the patentee and to solidify the patent incentive.<sup>15</sup> The doctrine is similar to constructive possession in property law: even though the patentee does not actually "possess" the invention at issue, we consider her to possess the invention for various policy reasons.

Beyond this superficial comparison, the doctrine of equivalents departs significantly from our ideas of constructive possession in other areas of property law. The doctrine of equivalents, in its current form, grants protection to patent holders for creations that by definition were not — and indeed could not have been — in their possession at the time of their patent applications. In fact, courts have made it clear that the doctrine effectively only has play in this context, where a later-developed technology alters the significance of the limitations found in the patent's claims.<sup>16</sup> Under the current state of the law, in fact, the inventor is given more protection for things that she could not have created than for those that were within her grasp.<sup>17</sup> The

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14. See generally Timothy R. Holbrook, *Possession in Patent Law*, 59 SMU L. REV. 123 (2006) (proposing enablement as the best mechanism to demonstrate possession).

15. See *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 731 (2002) ("If patents were always interpreted by their literal terms, their value would be greatly diminished. Unimportant and insubstantial substitutes for certain elements could defeat the patent, and its value to inventors could be destroyed by simple acts of copying."). In *Graver Tank & Manufacturing Co. v. Linde Air Products Co.*, 339 U.S. 605 (1950), the Court set forth its rationale for the doctrine of equivalents, explaining that:

[T]o permit imitation of a patented invention which does not copy every literal detail would be to convert the protection of the patent grant into a hollow and useless thing . . . It would deprive him of the benefit of his invention and would foster concealment rather than disclosure of inventions, which is one of the primary purposes of the patent system.

*Graver*, 339 U.S. at 607.

16. See *infra* Part III.B; cf. Mark A. Lemley, *The Changing Meaning of Patent Claim Terms*, 104 MICH. L. REV. 101, 120 (2005) ("Indeed, covering equivalent technology not contemplated when the patent claims were written is one of the major benefits of the doctrine of equivalents.").

17. One could question whether affording protection under the doctrine of equivalents for something that the inventor did not create could violate the Patent Clause of the Constitution, which permits Congress to grant to "Inventors the exclusive right to their respective . . . discoveries." U.S. CONST. art. I, § 8, cl. 8. See generally Paul J. Heald & Suzanna Sherry, *Implied Limits on the Legislative Power: The Intellectual Property Clause as an Absolute Constraint on Congress*, 2000 U. ILL. L. REV. 1119; Timothy R. Holbrook, *The Treaty Power and the Patent Clause: Are There Limits on the United States' Ability to Harmonize?*, 22 CARDOZO ARTS & ENT. L.J. 1, 5–21 (2004). The constitutional argument would be that the exclusive rights have been untethered from the inventor's discovery, thus violat-

idea of constructive possession in patent law seems to be stretching well beyond its logical limits and disrupts the idea of the *quid pro quo* between disclosure and patent scope.

Thus arises a troubling paradox: through the doctrine of equivalents, the patent holder is given control over something that by definition she did not actually possess at the time of her application (or more specifically, that a person of ordinary skill in the art would not have possessed).<sup>18</sup> She can exclude others from practicing a technology that she did not create. The patent holder can therefore control improvements and advances not objectively in her possession. The patent system is arguably providing a windfall: it protects an invention the patent holder did not invent, and furthermore *could not* have invented. Such scope of exclusion has serious implications for a system of innovation. It has the potential to allow the patent holder to block or control a downstream innovation even though that innovation is beyond what she invented or disclosed.<sup>19</sup> While some patent theorists would view this result as a desirable one,<sup>20</sup> there is reason to believe that such protection is unwarranted because it prevents spillovers and other positive externalities.<sup>21</sup>

Minimally, there should be some normative or theoretical account for why the courts should provide protection to patent holders for something they did not create. The courts and commentators have offered a number of explanations for the doctrine of equivalents, but few if any have recognized this paradox, let alone tried to resolve it.<sup>22</sup>

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ing the clause. I do not believe the doctrine violates the Patent Clause. There is no doubt that the inventor created something; the doctrine of equivalents involves the extent of the protection the government affords. The question would be the extent to which there must be a nexus between what is invented and the rights we give to protect that invention. It is not clear that the Constitution would require some sort of one-to-one connection. Thanks to Professor Eric Goldman for bringing this argument to my attention.

18. I will refer generally to what the inventor possessed at the time she filed her application. This reference to what the inventor possessed is somewhat inexact, as what I mean is that the invention would not have been within the possession of patent law's hypothetical person, the person having ordinary skill in the art (the "PHOSITA"). Given the awkwardness of this phrasing, I will, for ease, refer to what the inventor possessed, recognizing that "possession" is defined objectively.

19. Admittedly, this may be the only value for some inventions: there may not be a market for an invention itself until it is incorporated in downstream technology or further improved. Nevertheless, such a circumstance could suggest that patent protection was premature.

20. See, e.g., Eileen M. Kane, *Patent-Mediated Standards in Genetic Testing*, 2008 UTAH L. REV. 835, 855–56; Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265, 266 (1977).

21. See Brett M. Frischmann & Mark A. Lemley, *Spillovers*, 107 COLUM. L. REV. 257 (2007); Mark A. Lemley, *Ex Ante Versus Ex Post Justifications for Intellectual Property*, 71 U. CHI. L. REV. 129 (2004) [hereinafter Lemley, *Justifications*]; Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989, 994–95 (1997) [hereinafter Lemley, *Economics of Improvement*].

22. Some articles have considered the link between literal claim scope and after-arising technologies. See, e.g., Kevin Emerson Collins, *Enabling After-Arising Technology*, 34 J. CORP. LAW. 1083 (2009) [hereinafter Collins, *Enabling*]; Kevin Emerson Collins, *The*

This Article offers two potential reconciliations of the paradox. The narrower form is that protection for later-developed technologies is appropriate when the advance took place outside of both the inventor's field of technology and those fields of which the inventor should have been aware. This idea is based on a fairness principle: it is unreasonable to expect a technologist to be able to anticipate changes outside of her field that may create changes within her field. Protection in this context is justifiable when the accused infringer has in essence appropriated the invention but has relied on technological advances outside of the inventor's field. While a viable reconciliation of the paradox, this approach lacks the theoretical consistency of tying protection to the patent's disclosure and is therefore ultimately unsatisfying. In the broader approach, instead of focusing on the issue of later-developed technology alone, I posit that the equivalency question should ask whether the patent's disclosure would have enabled the accused device at the time of infringement. Over time, as technology and knowledge improve, a person skilled in the art may be able to understand broader implications from the inventor's original discovery, implications not apparent at the time the inventor filed her patent application. In this way, the question of equivalency is tied to the inventor's disclosure and to what she actually possessed.

Part II of this Article explores the current methods of assessing the literal scope of a patent's right to exclude. It explains the direct connection between patent scope and what the inventors actually possessed when they filed their patent applications. Part III explores the doctrine of equivalents and the various limits on equivalency, demonstrating that patentees are awarded protection under the doctrine only for later-developed technologies that were not in their possession. As a result, the current form of the doctrine of equivalents creates the possession paradox by affording patent protection for devices the inventor did not create. Part IV explores the current theories purporting to justify the doctrine of equivalents and finds them wanting in terms of justifying the paradox. Part V posits two potential reconciliations of the possession paradox to provide an appropriate balance and some guidance to issues of patent claim scope. In Part VI, I suggest that courts should consider denying permanent injunctions if infringement is by equivalents, due to the doctrine's potential power to greatly enhance patent scope; instead, patentees should be awarded damages. By this use of a liability rule in lieu of a property rule, the potential incentives created by the doctrine of equivalents against innovation and improvement could be mitigated, even under the courts' current approach to the doctrine.

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*Reach of Literal Claim Scope Into After-Arising Technology: On Thing Construction and the Meaning of Meaning*, 41 CONN. L. REV. 493 (2008) [hereinafter Collins, *Literal Claim Scope*]; Kane, *supra* note 20, at 855.

## II. DISCLOSURE, POSSESSION, AND LITERAL CLAIM SCOPE

A patent is granted to an inventor for creating a new, non-obvious, and useful invention.<sup>23</sup> The scope of patent protection is tethered to the inventor's creation as disclosed in the patent document. For example, Samuel Morse's patent did not give him the right to exclude others from using "motive power of the electric or galvanic current, which I call electro-magnetism, however developed for making or printing intelligible characters, signs, or letters, at any distances . . ."<sup>24</sup> The Supreme Court concluded that such a patent claim was "too broad, and not warranted by law" because "he claims an exclusive right to use a manner and process which he has not described and indeed had not invented, and therefore could not describe when he obtained his patent."<sup>25</sup> Similarly, the first person to create a vaccine for a particular retrovirus that infected chickens did not receive coverage for all vaccines for retroviruses, which would have included a vaccine for the AIDS viruses.<sup>26</sup>

The concept of "possessing" the invention is not contingent on the inventor's subjective belief. Courts assess the scope of the patent objectively by consulting the patent document itself and by using other relevant interpretive sources and tools, such as the history of the prosecution of the patent before the U.S. Patent and Trademark Office ("USPTO") and various canons of claim interpretation.<sup>27</sup> The patent's claims define the scope of the patent's right to exclude and provide the basis for assessing both validity and infringement.<sup>28</sup> The claims of a patent set forth the "metes and bounds" of the exclusive rights of the patent.<sup>29</sup> These limits are assessed objectively, from the viewpoint of patent law's analogue to the "reasonable person" of tort law — the PHOSITA. The inventor may be entitled to protection beyond what she individually invented, so long as that extension would have been apparent to the PHOSITA.<sup>30</sup> For example, the inventor could be a for-

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23. See 35 U.S.C. §§ 101–103 (2006).

24. O'Reilly v. Morse, 56 U.S. (15 How.) 62, 112 (1853).

25. *Id.* at 113.

26. *In re Wright*, 999 F.2d 1557 (Fed. Cir. 1993).

27. KIMBERLY A. MOORE, PAUL R. MICHEL & TIMOTHY R. HOLBROOK, PATENT LITIGATION AND STRATEGY 287–311 (3d ed. 2008); Timothy R. Holbrook, *Substantive Versus Process-Based Formalism in Claim Construction*, 9 LEWIS & CLARK L. REV. 123, 144–45 (2005) [hereinafter Holbrook, *Substantive Versus*].

28. Lemley, *supra* note 16, at 101.

29. Cf. Mark A. Lemley & Phillip J. Weiser, *Should Property or Liability Rules Govern Information?*, 85 TEX. L. REV. 783, 793–94, 793 n.58 (2007) (quoting *In re Vamco Mach. & Tool, Inc.*, 752 F.2d 1564, 1577 n.5 (Fed. Cir. 1985)) (likening patent disclosures to the descriptions of land in property deeds).

30. The justification is that a patent application should not be required to list every possible permutation of an invention, so long as the PHOSITA would be able to construct all of those variations. Recent developments in the written description requirement, however, have undermined this justification. See, e.g., *Gentry Gallery, Inc. v. Berkline Corp.*, 134 F.3d

tunate fool — in his mind, his invention is fairly trivial, but objectively within the field, his invention is actually an incredible breakthrough.<sup>31</sup> The patent system would provide fairly strong protection, so long as the patent document is drafted accordingly. Similarly, the inventor might believe that his invention is the most amazing thing since the wheel, but in reality it is a nominal improvement.<sup>32</sup> If the patent's disclosure would enable the PHOSITA to practice an embodiment of the invention, then rewarding the inventor for that advance through patent protection is appropriate, even if the inventor herself did not create that embodiment physically.<sup>33</sup>

Affording such protection is important to providing appropriate incentives to innovate and commercialize the inventor's creation. A patent affords its owner the right to exclude others from practicing the invention, allowing the patentee to recoup the sunk costs of developing the invention.<sup>34</sup> The patent can also provide incentives for others to invest in the patent holder's business or in the commercialization of the invention.<sup>35</sup> As a result, the breadth of protection afforded by a patent can be crucial to giving an appropriate incentive to invent or commercialize. The broader the rights, the greater the ability of the patentee to exclude others and therefore to profit from the invention.

The patent's disclosure can tailor the scope of the patent's protection in two interrelated ways. At the extreme, if the disclosure within the patent document does not adequately support the scope of the relevant claim, then the claim is invalid. The primary disclosure doctrine is enablement, which requires an applicant to disclose her invention in enough detail so as to enable the PHOSITA to practice it

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1473, 1479–80 (Fed. Cir. 1998). I have argued elsewhere that this use of the written description requirement is inappropriate. See Holbrook, *supra* note 14, at 161–63.

31. The inventor would need an able patent attorney, however, to craft the application in a manner that would allow the broadest claim scope possible. See Michael J. Meurer & Craig Allen Nard, *Invention, Refinement and Patent Claim Scope: A New Perspective on the Doctrine of Equivalents*, 93 GEO. L.J. 1947, 1951–52 (2005) (“Some inventors do not claim everything they have enabled because they do not know or cannot (or did not) articulate everything they have enabled. Whether an inventor obtains the broadest permissible claim breadth depends mostly on the talent and effort of the inventor and prosecutor in identifying what has been enabled.”).

32. The hype surrounding the release of the Segway® demonstrates how inventors may overvalue their invention. See John Heilemann, *Reinventing the Wheel*, TIME, Dec. 10, 2001, at 76, 78 (noting that the inventor believed the device “will be to the car what the car was to the horse and buggy” (internal quotations omitted)).

33. Applicants are allowed to include prophetic examples in their application, which are predictions of potential variations in their invention. If the technology is fairly predictable, then an inventor can easily extrapolate beyond the particular embodiment she actually created. See Sean B. Seymore, *Heightened Enablement in the Unpredictable Arts*, 56 UCLA L. REV. 127, 144–45 (2008) (discussing prophetic examples).

34. See Holbrook, *supra* note 14, at 132–33; Lemley, *Justifications*, *supra* note 21, at 129.

35. See Holbrook, *supra* note 14, at 135–36; F. Scott Kieff, *Property Rights and Property Rules for Commercializing Inventions*, 85 MINN. L. REV. 697, 703, 747–53 (2001); Kitch, *supra* note 20, at 266.

without undue experimentation.<sup>36</sup> If a claim is so broad that one could not readily practice it based on the patent's disclosure alone, the claim is invalid.<sup>37</sup> The patentee cannot enforce that claim against anyone.<sup>38</sup>

Second, the patent's disclosure affects the scope of protection in a more subtle way: it can influence the interpretation of the claim. Claim construction is the process by which a court or the USPTO defines the relevant terms in the patent to determine the patent's scope.<sup>39</sup> If there are a variety of plausible interpretations of a claim, some of which would be enabled and others which would not, the court should choose from the enabled interpretations. This analysis is reflected in

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36. The Federal Circuit has also elevated the written description requirement of 35 U.S.C. § 112 para. 1 as a separate ground for testing the adequacy of disclosure. *See generally* Janice M. Mueller, *The Evolving Application of the Written Description Requirement to Biotechnological Inventions*, 13 BERKELEY TECH. L.J. 615, 617 (1998) (explaining that the Federal Circuit's heightened written description requirement for claims to DNA, as expressed in *Regents of the University of California v. Eli Lilly & Co.*, 119 F.3d 1559 (Fed. Cir. 1997), may limit the protection available to biotechnological inventions, thus "contort[ing] the written description doctrine away from its historic origins and policy grounding"). Traditionally, the written description requirement was used to police the prohibition on new matter entering the patent application, which prevents patentees from updating their application with later technological advances. *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563–64 (Fed. Cir. 1991); Mark D. Janis, *On Courts Herding Cats: Contending with the "Written Description" Requirement (and Other Unruly Patent Disclosure Doctrines)*, 2 WASH. U. J.L. & POL'Y 55, 64–66 (2000). Now, however, the court uses the test even when there is no concern of violating the new matter prohibition. Mueller, *supra*, at 633; *see also* *Enzo Biochem, Inc. v. Gen-Probe Inc.*, 323 F.3d 956, 977–80 (Fed. Cir. 2002) (Rader, J., dissenting); *Regents of the Univ. of Cal. v. Eli Lilly & Co.*, 119 F.3d 1559, 1567–69 (Fed. Cir. 1997).

Originally the doctrine appeared to be limited to inventions relating to biotechnology and genetics, *see* Mueller, *supra*, at 633, but the Federal Circuit has since expanded it to other areas. *See, e.g.*, *LizardTech, Inc. v. Earth Res. Mapping, Inc.*, 424 F.3d 1336 (Fed. Cir. 2005); *Gentry Gallery, Inc. v. Berkline Corp.*, 134 F.3d 1473, 1479–80 (Fed. Cir. 1998). I and others, including Federal Circuit judges, have sharply criticized this doctrine. *See LizardTech, Inc.*, 424 F.3d at 1376–81 (Rader, J., dissenting); Holbrook, *supra* note 14, at 161–63; Mueller, *supra*, at 617, 649–52; Harris A. Pitlick, *The Mutation on the Description Requirement Gene*, 80 J. PAT. & TRADEMARK OFF. SOC'Y 209, 222–23 (1998); Harold C. Wegner, *When a Written Description Is Not a "Written Description": When Enzo Says It's Not*, 12 FED. CIR. B.J. 271, 274 (2002).

My view is that the best way to assess the possession of an invention is through the enablement standard, not the written description requirement. Holbrook, *supra* note 14, at 161–63. Recent Federal Circuit case law, however, is bringing enablement into line with the written description requirement. *See* *Sitrick v. Dreamworks, LLC*, 516 F.3d 993, 1000 (Fed. Cir. 2008); *Auto. Techs. Int'l, Inc. v. BMW of N. Am., Inc.*, 501 F.3d 1274, 1283 (Fed. Cir. 2007) ("Although the knowledge of one skilled in the art is indeed relevant, the novel aspect of an invention must be enabled in the patent."). This debate is not central to the main premise of this article — that the doctrine of equivalents provides protection for that which by definition the inventor did not objectively possess. As of this writing, the Federal Circuit is reconsidering its written description jurisprudence en banc. *See* *Ariad Pharms., Inc. v. Eli Lilly & Co.*, No. 2008-1248, 2009 WL 2573004 (Fed. Cir. Aug. 21, 2009) (per curiam) (granting en banc review).

37. *See, e.g.*, *Liebel-Flarsheim Co. v. Medrad, Inc.*, 481 F.3d 1371, 1378–80 (Fed. Cir. 2007).

38. *See generally* *Blonder-Tongue Labs., Inc. v. Univ. of Ill. Found.*, 402 U.S. 313 (1971).

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

the canon of claim construction suggesting that courts should interpret patent claims to maintain their validity whenever reasonably possible.<sup>40</sup> While giving the claim a narrower construction may remove an accused infringing device from the coverage of the patent, the patentee would still have a valid claim that she may be able to enforce against other infringers. Such a link between the disclosure and claim scope is appropriate — the patent claim should not cover more than what the inventor has contributed objectively to the technological field. The patent in such cases should be construed as limited to what the inventor objectively possessed.<sup>41</sup> In this way, the scope of the claim is closely linked to the extent of the patent's disclosure, limiting the patent to that which the inventor objectively possessed.

One could take this tailoring of claim scope with the inventor's possession one step further by requiring that the patent enable the accused device in order for there to be literal infringement. By reading the patent, one of ordinary skill in the art should be able to make the accused device without undue experimentation. This approach to literal infringement would link the scope of the patent to the extent of the patent's disclosure: if one could not practice the accused device based on the patent's teaching, then the patent would not cover it.<sup>42</sup> The accused device would not be within the inventor's possession.

To be clear, this approach is not the current state of the law. Enablement law currently focuses on the scope and validity of the claim.<sup>43</sup> Infringement analysis only involves the comparison of the accused device to the construed patent claim and does not inquire as to the sufficiency of the disclosure vis-à-vis the accused device. It is quite possible for a patent to literally cover a device that the patent's disclosure does not enable.<sup>44</sup> Even if there is a separate patent for the accused device, suggesting that there are significant differences between the two devices, there still may be infringement.

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40. *Modine Mfg. Co. v. U.S. Int'l Trade Comm'n*, 75 F.3d 1545, 1557 (Fed. Cir. 1996); see also *Holbrook, Substantive Versus*, *supra* note 27, at 144. *But see Phillips v. AWH Corp.*, 415 F.3d 1303, 1327 (Fed. Cir. 2005) (en banc) (“While we have acknowledged the maxim that claims should be construed to preserve their validity, we have not applied that principle broadly, and we have certainly not endorsed a regime in which validity analysis is a regular component of claim construction.”).

41. See *Network, LLC v. Centraal Corp.*, 242 F.3d 1347, 1352 (Fed. Cir. 2001) (“Although the specification need not present every embodiment or permutation of the invention and the claims are not limited to the preferred embodiment of the invention, neither do the claims enlarge what is patented beyond what the inventor has described as the invention.” (citing *Comark Commc'ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1186 (Fed. Cir. 1998) (internal citation omitted)); cf. *Acumed LLC v. Stryker Corp.*, 483 F.3d 800, 815 (Fed. Cir. 2007) (Moore, J., dissenting) (“Patent scope should be coextensive with what the inventor invented as evidenced by what is disclosed in the patent specification.”).

42. See Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839, 845 (1990).

43. See, e.g., *Auto. Techs. Int'l, Inc. v. BMW of N. Am., Inc.*, 501 F.3d 1274, 1283 (Fed. Cir. 2007) (discussing enablement of claim without reference to accused device).

44. See *Collins, Enabling*, *supra* note 22, at 1086–87.

For example, assume that the original patent covers a method of making a drug. The patent claims a method comprising steps A, B, C, and D. A competitor subsequently discovers a catalyst for the reaction that improves the efficiency of the process, so that one can get more of the drug using lesser amounts of the initial reagents. The competitor performs the same steps, A+B+C+D, but also uses the catalyst. The competitor even obtains a patent for the use of the catalyst in the method.<sup>45</sup> The original patent could not enable the use of the subsequent method with the catalyst because no one knew that the catalyst would have such an effect when the original patent application was filed.<sup>46</sup> But, under current law, the competitor would still be literally infringing the patent because he is performing all of the claimed steps.<sup>47</sup>

Patents in this situation — one covering the initial discovery and a subsequent one covering an improvement — are known as blocking patents.<sup>48</sup> The original inventor cannot use the improved process without getting approval from the improver; similarly, the improver cannot practice his invention at all without getting the approval of the original inventor. The solution is to cross-license the patents, allowing both parties to use the patented methods.<sup>49</sup> A strict requirement that, to infringe, the patent must enable the accused device could mitigate the blocking patent problem: if the improvement were a non-obvious one, the original patent likely would not have enabled it.<sup>50</sup> In the above hypothetical, the original patent could not enable the improvement because it did not, and could not, disclose the catalyst.

While this approach does not reflect the actual law, an existing doctrine comes close to implementing this view of patent scope. Patent law has a defense to literal patent infringement:

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45. See 35 U.S.C. § 101 (2006) (permitting patents on improvements of inventions).

46. It would seem that the use of the catalyst, even if it existed at the time the application was filed, would be unforeseeable. However, recent Federal Circuit case law has suggested the contrary by concluding that an equivalent may be foreseeable even if its potential application was not known at the time of filing an amendment to a claim so long as the equivalent existed at that time. See, e.g., *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 493 F.3d 1368, 1382 (Fed. Cir. 2007) (“An equivalent is foreseeable if one skilled in the art would have known that the alternative existed in the field of art as defined by the original claim scope, even if the suitability of the alternative for the particular purposes defined by the amended claim scope were unknown.”).

47. See *Atlas Powder Co. v. E.I. du Pont de Nemours & Co.*, 750 F.2d 1569, 1580 (Fed. Cir. 1984).

48. See Collins, *Literal Claim Scope*, *supra* note 22, at 497; Merges & Nelson, *supra* note 42, at 860–62.

49. See Joseph Scott Miller, *Standard Setting, Patents, and Access Lock-In: RAND Licensing and the Theory of the Firm*, 40 IND. L. REV. 351, 385–86 (2007).

50. See Holbrook, *supra* note 14, at 169–73 (discussing the link between obviousness and enablement).

[W]here a device is so far changed in principle from a patented article that it performs the same or a similar function in a substantially different way, but nevertheless falls within the literal words of the claim, the doctrine of equivalents may be used to restrict the claim and defeat the patentee's action for infringement.<sup>51</sup>

This doctrine, known as the “reverse doctrine of equivalents,”<sup>52</sup> recognizes that there are occasions when it is inappropriate to allow the patent to cover the accused device, even if the literal terms of a patent's claim are met. The Federal Circuit has expressly tied this doctrine to the extent of the patent's disclosure:

The reverse doctrine of equivalents is invoked when claims are written more broadly than the disclosure warrants. The purpose of restricting the scope of such claims is not only to avoid a holding of infringement when a court deems it appropriate, but often is to preserve the validity of claims with respect to their original intended scope.<sup>53</sup>

The reverse doctrine of equivalents consequently acts as a check on overly broad claims<sup>54</sup> — if the claim is broader than is warranted by the patent's disclosure, then there is no infringement even if the claims literally read would cover the accused device.<sup>55</sup> In this way, the

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51. *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 608–09 (1950). In *Boyden Power Brake Co. v. Westinghouse*, 170 U.S. 537 (1898), the Court explained that the reverse doctrine of equivalents focused on the intent of the inventor's claims:

The patentee may bring the defendant within the letter of his claims, but if the latter has so far changed the principle of the device that the claims of the patent, literally construed, have ceased to represent his actual invention, he is as little subject to be adjudged an infringer as one who has violated the letter of a statute has to be convicted, when he has done nothing in conflict with its spirit and intent.

*Boyden Power Brake Co.*, 170 U.S. at 568.

52. *SRI Int'l v. Matsushita Elec. Corp. of Am.*, 775 F.2d 1107, 1123 (Fed. Cir. 1985).

53. *Tex. Instruments, Inc. v. U.S. Int'l Trade Comm'n*, 846 F.2d 1369, 1372 (Fed. Cir. 1988); see also *Merges & Nelson*, *supra* note 42, at 911 (“The same point should be borne in mind when a claim covers embodiments that turn out to be well beyond the teaching of the patent's disclosure. This is the case of so-called reverse equivalents.”); Charles F. Pigott, Jr., *Equivalents in Reverse*, 48 J. PAT. OFF. SOC'Y 291, 292 (1966) (“[N]o matter how broad the claims may be when taken literally, and even though they may avoid the prior art when given the broadest interpretation, nevertheless the claims can cover only the particular embodiment the patentee has disclosed and equivalents thereof.”).

54. See *Kane*, *supra* note 20, at 861.

55. Other commentators have recognized the important role the reverse doctrine of equivalents should play in tailoring patent scope. See, e.g., Michael A. Carrier, *Cabining Intellectual Property Through a Property Paradigm*, 54 DUKE L.J. 1, 118–23 (2004); Lemley, *Economics of Improvement*, *supra* note 21, at 1010–13; *Merges & Nelson*, *supra* note 42, at

scope of the patent is reined in without necessarily invalidating the claim for not being enabled by the specification. Regardless, claim construction doctrine clearly links the permissible literal scope of the patent to what the inventor actually possessed, as assessed by the disclosures in the specification.

Given the centrality of claim construction in patent law, one would think that this area of patent law would be fairly settled and that assessing the scope of a patent's right to exclude would be fairly routine. Nothing could be further from the truth. On multiple levels, courts struggle to assess the meaning of claim terms and the consequent scope of the right to exclude. The construction of the literal meaning of a claim is rife with uncertainty.<sup>56</sup> The Federal Circuit reverses approximately thirty percent of district court decisions due to erroneous claim construction.<sup>57</sup>

As if that state of affairs were not bad enough, the doctrine of equivalents compounds that problem by affording protection not only for the literal scope of the patent claim but also for other things that are close enough to be considered infringing.<sup>58</sup> The rationale for the doctrine historically has been rooted in fairness,<sup>59</sup> in much the same

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856–66; Bernard Chao, *Rethinking Enablement in the Predictable Arts: Fully Scoping the New Rule*, 2009 STAN. TECH. L. REV. 3, ¶¶ 85–88, <http://stlr.stanford.edu/pdf/chaor-thinking-enablement.pdf>. Notwithstanding the important role the doctrine should play in policing claim scope, the Federal Circuit has never affirmed a finding of non-infringement under the reverse doctrine and indeed has questioned its continued viability. See *Roche Palo Alto LLC v. Apotex, Inc.*, 531 F.3d 1372, 1377–79 (Fed. Cir. 2008); *Tate Access Floors, Inc. v. Interface Architectural Res., Inc.*, 279 F.3d 1357, 1368 (Fed. Cir. 2002) (“Not once has this court affirmed a decision finding noninfringement based on the reverse doctrine of equivalents . . . . Even were this court likely ever to affirm a defense to literal infringement based on the reverse doctrine of equivalents, the presence of one anachronistic exception, long mentioned but rarely applied, is hardly reason to create another.”); *Scripps Clinic & Research Found. v. Genentech, Inc.*, 927 F.2d 1565, 1581 (Fed. Cir. 1991) (“[T]he purpose of the ‘reverse’ doctrine is to prevent unwarranted extension of the claims beyond a fair scope of the patentee’s invention.”).

56. See JAMES BESSEN & MICHAEL J. MEURER, *PATENT FAILURE* 56–61 (2008); Dan L. Burk & Mark A. Lemley, *Fence Posts or Sign Posts? Rethinking Patent Claim Construction*, 157 U. PA. L. REV. 1743, 1751–61 (2009).

57. See Christian A. Chu, *Empirical Analysis of the Federal Circuit’s Claim Construction Trends*, 16 BERKELEY TECH. L.J. 1075, 1104 (2001); Kimberly A. Moore, *Are District Court Judges Equipped to Resolve Patent Cases?*, 15 HARV. J.L. & TECH. 1, 11 (2001); Kimberly A. Moore, *Markman Eight Years Later: Is Claim Construction More Predictable?*, 9 LEWIS & CLARK L. REV. 231, 239 (2005); David L. Schwartz, *Practice Makes Perfect? An Empirical Study of Claim Construction Reversal Rates in Patent Cases*, 107 MICH. L. REV. 223, 240 (2008).

58. See *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 607–09 (1950).

59. See *id.* at 607 (“[T]o permit imitation of a patented invention which does not copy every literal detail would be to convert the protection of the patent grant into a hollow and useless thing . . . . To prohibit no other would place the inventor at the mercy of verbalism and would be subordinating substance to form. It would deprive him of the benefit of his invention and would foster concealment rather than disclosure . . . .”); see also *Winans v. Denmead*, 56 U.S. 330, 343 (1853) (“[I]t is the duty of courts and juries to look through the form for the substance of the invention — for that which entitled the inventor to his patent, and which the patent was designed to secure; where that is found, there is an infringement;

way constructive possession has been rationalized in property law. Although the inventor was not in actual possession of the particular variant of his creation, as measured by the patent's disclosure, courts treat the inventor as if he did possess the accused device by finding infringement under the doctrine of equivalents.

### III. EQUIVALENTS, LATER-DEVELOPED TECHNOLOGIES, AND THE POSSESSION PARADOX

As Part II demonstrates, the literal scope of a patent is directly tied to what the inventor actually possessed, as demonstrated by the patent's disclosure. One would logically think, therefore, that any form of additional protection through the doctrine of equivalents for what an inventor constructively possessed would similarly be connected to the patent specification. One can draw a comparison to the role of constructive possession in property law. For example, the law views wild animals as a hunter's property not only when they are taken into his possession but also when they are trapped or mortally wounded.<sup>60</sup> Constructive possession in these contexts effects policies of fairness that somewhat mitigate the harsh consequences of a pure actual possession rule. Nevertheless, the property right is still tied to possession.

This comparison to constructive possession in property law breaks down under the current doctrine of equivalents. Counterintuitively, the Federal Circuit has precluded access to the doctrine of equivalents if the asserted equivalent is one that should have been in the inventor's possession during the application process.<sup>61</sup> He gets more protection for something he did not, and could not, possess. Unlike in *Pierson*, where the hunter effectively did possess the animal,<sup>62</sup> the object of possession here is beyond the inventor's grasp by definition. This phenomenon can be seen in the courts' preference for affording protection for later-developed technologies and in the legal limitations on the doctrine of equivalents, all of which essentially preclude equivalency if the patentee should have claimed the asserted equivalent literally.<sup>63</sup> The doctrine of equivalents, therefore, creates a

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and it is not a defence, that it is embodied in a form not described, and in terms claimed by the patentee." See generally Chisum, *supra* note 6 (explaining that despite new developments in Federal Circuit doctrine, the doctrine of equivalents traditionally served — and will continue to serve — to protect the substance of the patent and accompanying patent rights).

60. *Pierson v. Post*, 3 Cai. 175 (N.Y. Sup. Ct. 1805).

61. See, e.g., *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 493 F.3d 1368, 1382 (Fed. Cir. 2007).

62. See *Pierson*, 3 Cai. at 175.

63. See Christopher A. Cotropia, "After-Arising" Technologies and Tailoring Patent Scope, 61 N.Y.U. ANN. SURV. AM. L. 151, 151–52 (2005); Anthony H. Azure, Note, *Festo's Effect on After-Arising Technology and the Doctrine of Equivalents*, 76 WASH. L. REV.

possession paradox: the patent covers devices that were not in the inventor's possession when she filed her application.

#### A. Equivalency and "Later-Developed Technology"

Patent law does not limit patent scope to the literal terms of the claim. The default rule for patent scope is that a patent covers not only what is literally delineated in the claims but also equivalents to each of the claims' limitations.<sup>64</sup> Specifically, if a limitation of the claim is not literally present in the accused device, there may yet be infringement if that component is considered equivalent to what was claimed.<sup>65</sup> In essence, if the accused device is close enough to be considered effectively the same as the claimed invention, then there is still infringement. In this way, the doctrine of equivalents operates as a constructive possession doctrine.

The determination of whether something is equivalent, however, is generally a messy, fact-intensive endeavor.<sup>66</sup> Courts have used a variety of factors, noting that equivalency is not a "prisoner of a formula."<sup>67</sup> One test courts have used is the tripartite "function-way-result" test: to be equivalent, the element of the accused device must "perform[] substantially the same function in substantially the same way to obtain the same result" as the claim limitation.<sup>68</sup> Courts have

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1153, 1163 (2001). This was not always the state of the law, as protection for later-developed technologies is a more recent development. *See Merges & Nelson, supra* note 42, at 855 ("The early cases were split, but the prevailing view now is that new technology can be equivalent.").

64. *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 21 (1997) ("Under [the doctrine of equivalents], a product or process that does not literally infringe upon the express terms of a patent claim may nonetheless be found to infringe if there is 'equivalence' between the elements of the accused product or process and the claimed elements of the patented invention.").

65. *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1459 (Fed. Cir. 1998) (en banc) ("An accused device that does not literally infringe a claim may still infringe under the doctrine of equivalents if each limitation of the claim is met in the accused device either literally or equivalently.").

66. As the Supreme Court unhelpfully noted:

What constitutes equivalency must be determined against the context of the patent, the prior art, and the particular circumstances of the case. Equivalence, in the patent law, is not the prisoner of a formula and is not an absolute to be considered in a vacuum. It does not require complete identity for every purpose and in every respect. In determining equivalents, things equal to the same thing may not be equal to each other and, by the same token, things for most purposes different may sometimes be equivalents.

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

67. *Id.*

68. *Id.* at 608 (quoting *Sanitary Refrigerator Co. v. Winters*, 280 U.S. 30, 42 (1929)); *see also Warner-Jenkinson Co.*, 520 U.S. at 40 ("An analysis of the role played by each element in the context of the specific patent claim will thus inform the inquiry as to whether a substitute element matches the function, way, and result of the claimed element, or whether the substitute element plays a role substantially different from the claimed element.").

elsewhere articulated an alternative analysis examining whether the element in the accused device is insubstantially different from what was claimed.<sup>69</sup> Finally, courts have considered the known interchangeability of the relevant element with the feature in the claim as supporting a finding of equivalency.<sup>70</sup>

In *Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*,<sup>71</sup> the Supreme Court clarified that the determination of whether there is infringement under the doctrine of equivalents is to be made at the time of infringement.<sup>72</sup> In determining whether the accused device contains an equivalent element under the above tests, it is permissible to consider advances in technology that may have occurred between the time the inventor filed the relevant patent application and the time of infringement. What may later be viewed as an equivalent may not have been an equivalent when the patent was filed because that technology may not have been as evolved at the time of the application.

This temporal shift has played into the Federal Circuit's analysis of equivalency. Indeed, the court has suggested that a key purpose of the doctrine is to protect the patentee against later-developed technology. Shortly after the Federal Circuit's creation, it noted that "[t]he doctrine of equivalents is designed to protect inventors from unscrupulous copyists and unanticipated equivalents,"<sup>73</sup> suggesting a focus on later-developed technologies. In *Pennwalt Corp. v. Durand-Wayland, Inc.*,<sup>74</sup> the Federal Circuit noted in finding no equivalency that "the facts here do not involve later-developed computer technology which should be deemed within the scope of the claims to avoid the pirating of an invention."<sup>75</sup> Implicitly, if the case did involve later-developed technology beyond the inventor's actual possession, the case for equivalency would have been stronger.

The Federal Circuit has drawn on the Supreme Court's holding in *Warner-Jenkinson* regarding the timing of the infringement analysis to support the proposition that the application of the doctrine of equivalents is most appropriate when the accused device incorporates

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69. See *Lighting World, Inc. v. Birchwood Lighting, Inc.*, 382 F.3d 1354, 1357 (Fed. Cir. 2004). But see *Warner-Jenkinson*, 520 U.S. at 40 ("[T]he insubstantial differences test offers little additional guidance as to what might render any given difference 'insubstantial.'").

70. See *Graver Tank*, 339 U.S. at 609 ("An important factor is whether persons reasonably skilled in the art would have known of the interchangeability of an ingredient not contained in the patent with one that was.").

71. 520 U.S. 17 (1996).

72. *Id.* at 37 ("[T]he proper time for evaluating equivalency — and thus knowledge of interchangeability between elements — is at the time of infringement, not at the time the patent was issued.").

73. *Kinzenbaw v. Deere & Co.*, 741 F.2d 383, 389 (Fed. Cir. 1984) (citation omitted).

74. 833 F.2d 931 (Fed. Cir. 1987) (en banc).

75. *Id.* at 938.

later-developed technology.<sup>76</sup> For example, the court noted in *Sage Products, Inc. v. Devon Industries, Inc.*<sup>77</sup> that application of the doctrine was inappropriate because “[n]o subtlety of language or complexity of the technology, nor any subsequent change in the state of the art, such as later-developed technology, obfuscated the significance of this limitation at the time of its incorporation into the claim.”<sup>78</sup> More particularly, the court noted that, “as between the patentee who had a clear opportunity to negotiate broader claims but did not do so, and the public at large, it is the patentee who must bear the cost of its failure to seek protection for this foreseeable alteration of its claimed structure.”<sup>79</sup>

The court effectively is saying that, if the asserted equivalent was foreseeable, then the patentee should have claimed it and will be unable to use the doctrine to capture that variation. If the applicant should have been in possession of that embodiment, she generally will be precluded from asserting equivalency over it. Necessarily, if the accused device represents an advance in technology, then the applicant could not have claimed it and therefore should be afforded protection under the doctrine of equivalents. Application of this reasoning appears in *Hughes Aircraft Co. v. United States*,<sup>80</sup> where the court noted that “[t]his is a case in which a ‘subsequent change in the state of the art, such as later-developed technology, obfuscated the significance of [the] limitation at the time of its incorporation into the claim.’”<sup>81</sup> This approach to equivalency destroys the link between the patent’s disclosure and the patent’s scope, paradoxically allowing the patent to cover something outside of the inventor’s actual possession.

The requirement for later-developed technology is illustrated interestingly in the application of the doctrine of equivalents to limitations drafted in means-plus-function form pursuant to 35 U.S.C. § 112 para. 6. According to this statutory provision, an applicant may write a claim limitation in terms of the function to be performed, but the limitation will be construed as covering the structure disclosed in the specification that performs that function and the equivalents to that structure.<sup>82</sup> In other words, “equivalents” under § 112 represents the *literal* scope of the claim,<sup>83</sup> which is distinct from the notion of equi-

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76. See *Hughes Aircraft Co. v. United States*, 140 F.3d 1470, 1475 (Fed. Cir. 1998) (citing *Warner-Jenkinson’s* conclusion on timing of the equivalency analysis to support the view that the doctrine of equivalents affords protection for later-developed technologies).

77. 126 F.3d 1420 (Fed. Cir. 1997).

78. *Id.* at 1425.

79. *Id.*

80. 140 F.3d 1470 (Fed. Cir. 1998).

81. *Id.* at 1475 (quoting *Sage Prods., Inc. v. Devon Indus., Inc.*, 126 F.3d 1420, 1425 (Fed. Cir. 1997)).

82. 35 U.S.C. § 112, para. 6 (2006).

83. *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 934 (Fed. Cir. 1987) (en banc).

valency under the doctrine of equivalents. The patentee is still entitled to the application of the doctrine of equivalents to a means-plus-function limitation.<sup>84</sup> Needless to say, this “equivalent to an equivalent” has caused confusion and consternation, even at the Federal Circuit.<sup>85</sup>

The Federal Circuit has recognized that equivalency under § 112 and the doctrine of equivalents are related.<sup>86</sup> Section 112 para. 6 requires that the accused device perform the identical function — not substantially the same function — as that described in the specification.<sup>87</sup> The analysis of general insubstantial differences between the way the claimed and accused devices operate is common to both forms of equivalency.<sup>88</sup> Due to the relatedness of the two forms of equivalency, the Federal Circuit has concluded that “a finding of non-equivalence for § 112 para. 6, purposes should preclude a contrary finding under the doctrine of equivalents.”<sup>89</sup> The court articulated a rationale for this preclusion:

[T]he structure of the accused device differs substantially from the disclosed structure, and given the prior knowledge of the technology asserted to be equivalent, it could readily have been disclosed in the patent. There is no policy-based reason why a patentee should get two bites at the apple. If he or she could have included in the patent what is now alleged to be equivalent, and did not, leading to a conclusion that an accused device lacks an equivalent to

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84. *See, e.g.*, *WMS Gaming, Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1353 (Fed. Cir. 1999).

85. *See Dawn Equip. Co. v. Ky. Farms Inc.*, 140 F.3d 1009, 1018–24 (Fed. Cir. 1998) (Plager, Newman, Michel, JJ., additional views). In *Dawn Equipment*, all three judges on the panel filed “additional views” to debate the availability of the doctrine of equivalents to means-plus-function claims, showing considerable discord and confusion over the issue. *See id.* Of particular interest are Judge Plager’s additional views, where he advocates simply precluding the availability of the doctrine of equivalents to means-plus-function claims. *Id.* at 1020–22 (Plager, J., additional views). On the confusion over the relationship between means-plus-function claims and the doctrine of equivalents, see Mark D. Janis, *Who's Afraid of Functional Claims? Reforming the Patent Law's § 112, ¶ 6 Jurisprudence*, 15 SANTA CLARA COMPUTER & HIGH TECH. L.J. 231, 235–36, 272–90 (1999).

86. *Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus., Inc.*, 145 F.3d 1303, 1310 (Fed. Cir. 1998).

87. *WMS Gaming*, 184 F.3d at 1353 (“However, we have reversed the district court’s holding of literal infringement based on a lack of identity of function. Consequently, unlike *Chiuminatta*, the accused device in this case may still infringe under the doctrine of equivalents.”); *Chiuminatta*, 145 F.3d at 1310 (stating that “the doctrine of equivalents are not coextensive (for example, § 112, ¶ 6, requires identical, not equivalent function”).

88. *See Chiuminatta*, 145 F.3d at 1310.

89. *Id.* at 1311; *see also Nomos Corp. v. Brainlab USA, Inc.*, 357 F.3d 1364, 1369 (Fed. Cir. 2004) (“The technology . . . predates the '026 patent and, therefore, does not qualify as after-developed. Consequently, the finding of no literal infringement in this case is dispositive as to infringement under the doctrine of equivalents as well.”).

the disclosed structure, why should the issue of equivalence have to be litigated a second time?<sup>90</sup>

One exception to this general rule of preclusion, however, is the case of later-developed technology. Equivalency under § 112 para. 6, a form of literal infringement, is assessed at the time the patent issues.<sup>91</sup> In contrast, equivalency under the doctrine of equivalents is determined at the time of infringement, accommodating later-developed technology.<sup>92</sup> The doctrine of equivalents generally will apply to a means-plus-function limitation if the element in the accused device is the result of a technological advance, so long as the test for equivalency is still satisfied.<sup>93</sup> The Federal Circuit explained:

Due to technological advances, a variant of an invention may be developed after the patent is granted, and that variant may constitute so insubstantial a change from what is claimed in the patent that it should be held to be an infringement. Such a variant, based on after-developed technology, could not have been disclosed in the patent. Even if such an element is found not to be a § 112, ¶ 6, equivalent because it is not equivalent to the structure disclosed in the patent, this analysis should not foreclose it from being an equivalent under the doctrine of equivalents.<sup>94</sup>

The patentee is therefore entitled to protection for something that she could not have claimed when she filed her application. The court later elaborated:

Patent policy supports application of the doctrine of equivalents to a claim element expressed in means-plus-function form in the case of “after-arising” technology because a patent draftsman has no way to anticipate and account for later developed substitutes for a claim element. Therefore, the doctrine of equi-

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90. *Chiuminatta*, 145 F.3d at 1311.

91. *Al-Site Corp. v. VSI Int'l, Inc.*, 174 F.3d 1308, 1320 (Fed. Cir. 1999) (stating that “an equivalent structure or act under § 112 for literal infringement must have been available at the time of patent issuance”).

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

93. *See Al-Site*, 174 F.3d at 1320 (“An ‘after-arising’ technology could thus infringe under the doctrine of equivalents without infringing literally as a § 112, ¶ 6 equivalent.”).

94. *Chiuminatta*, 145 F.3d at 1310.

valents appropriately allows marginally broader coverage than § 112, ¶ 6.<sup>95</sup>

The possession paradox thus can be readily seen in the courts' application of equivalency. The doctrine of equivalents applies primarily for later-developed technology that the patentee could not have claimed in her patent application. Yet, the courts fail to explain why a patentee should be *entitled* to such protection: why should a patentee get protection for something that was not within her possession when she filed her application?

*B. The Legal Limitations on the Doctrine of Equivalents Confirm the Paradox*

The paradox created by the courts' preference for applying the doctrine of equivalents to devices beyond the inventor's actual possession is confirmed by other legal limitations placed on the doctrine. Essentially, these limitations preclude the application of the doctrine of equivalents if the patentee was or should have been in possession of the equivalent at the time of the application. Specifically, the doctrines of prosecution history estoppel, public dedication, and specification estoppel preclude the application of the doctrine of equivalents unless the asserted equivalent was unforeseeable. As a result, these various doctrines have the unintended consequence of making foreseeability the primary limit on equivalency, resulting in the reification of the possession paradox. Indeed, one Federal Circuit judge has gone so far as to say that foreseeability should be the only limit on the doctrine of equivalents, supplanting the various alternative doctrines that currently are in place.<sup>96</sup> The following Part explores these doctrines and their implications in detail.

1. Prior Art Preclusion

The clearest example of such a limit on the doctrine of equivalents is a rule that precludes the doctrine's application to devices that were already in the prior art.<sup>97</sup> The rationale for this limit is straightforward: the patent holder cannot use the doctrine of equivalents to obtain coverage over something for which she could not have obtained literal protection.<sup>98</sup> If the public (and necessarily the applicant) was in actual possession of the accused device already, then it cannot

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95. *Al-Site*, 174 F.3d at 1320 n.2.

96. See *infra* notes 125–27 and accompanying text.

97. See *Wilson Sporting Goods Co. v. David Geoffrey & Assocs.*, 904 F.2d 677, 683–86 (Fed. Cir. 1990).

98. *Id.* at 684.

be considered an equivalent as a matter of law.<sup>99</sup> The rationale for this doctrine provides the root of many of the later limitations, including circumstances where the patentee will be precluded from asserting equivalency not only over things she could not claim as a result of the prior art but also over things she should have claimed, but failed to do so.

## 2. Public Dedication Rule

The possession paradox of the doctrine of equivalents also can be seen in the public dedication rule, which precludes a patentee from asserting equivalency over an embodiment that is disclosed in the patent's specification but not claimed.<sup>100</sup> The justification for the doctrine is that the patentee could have claimed the embodiment but failed to do so.<sup>101</sup> The doctrine of equivalents should not be used to cover such gaps in claim drafting. In other words, if the inventor was in possession of a particular variation of the invention, or if the PHOSITA would understand that variation from the patent, but the inventor failed to claim it, then the variation falls into the public domain.<sup>102</sup> Possession by the inventor is central to the dedication rule. This rule, however, demonstrates the paradox: if the asserted equivalent was not disclosed (and thus not in the possession of the inventor), then equivalency is available. The rule fails to provide a normative explanation for why equivalency should be available for embodiments of the invention that were outside the possession of the patent holder.

## 3. Prosecution History Estoppel

Another limitation on the doctrine of equivalents is prosecution history estoppel, which precludes infringement under the doctrine if the patent holder surrendered the relevant equivalent over the course of the application process at the USPTO. Such surrender can occur when the applicant amends a claim that had literally covered the as-

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99. *See id.* at 683.

100. *Johnson & Johnston Assocs. Inc. v. R.E. Serv. Co.*, 285 F.3d 1046, 1054 (Fed. Cir. 2002) (en banc).

101. *Id.* at 1054 ("Moreover, a patentee cannot narrowly claim an invention to avoid prosecution scrutiny by the USPTO, and then, after patent issuance, use the doctrine of equivalents to establish infringement because the specification discloses equivalents.").

102. The Federal Circuit has addressed the issue of how specific the disclosure must be to trigger the rule. *See Toro Co. v. White Consol. Indus., Inc.*, 383 F.3d 1326, 1334 (Fed. Cir. 2004) (rejecting enablement as a standard for sufficiency of disclosure); *PSC Computer Prods., Inc. v. Foxconn Int'l, Inc.*, 355 F.3d 1353, 1360 (Fed. Cir. 2004) ("This [public dedication] rule does not mean that any generic reference in a written specification necessarily dedicates all members of that particular genus to the public. The disclosure must be of such specificity that one of ordinary skill in the art could identify the subject matter that had been disclosed and not claimed."). *But see* Holbrook, *supra* note 14, at 167 (arguing for enablement-based standard for public dedication).

served equivalent before the amendment but no longer does so after the amendment.<sup>103</sup> Surrender can also occur if the applicant makes arguments that evince a clear surrender of that subject matter, even absent an actual amendment to a claim.<sup>104</sup> Prosecution history estoppel, examined through the lens of possession, assesses whether the patentee possessed the relevant equivalent during the prosecution of the patent.

In *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*,<sup>105</sup> the Supreme Court created a rebuttable presumption of prosecution history estoppel: if an applicant makes a narrowing amendment for reasons related to the patentability of the invention, the applicant presumptively has surrendered all equivalents as to that amended limitation.<sup>106</sup> Because the presumption is rebuttable, a patentee can still assert equivalency if the amendment bore only a tangential relationship to the asserted equivalent, if the asserted equivalent would not have been foreseeable to a PHOSITA at the time the applicant made the amendment, or if it would be inappropriate to limit the patentee to the literal scope of her claim for some other reason.<sup>107</sup>

The foreseeability rebuttal, when properly considered, is an issue of possession. The foreseeability inquiry asks whether the PHOSITA would have recognized that the asserted equivalent had been available at the time of the amendment. The test is essentially whether the patentee should have been able to draft a claim that literally covered the allegedly equivalent device. In order to claim the equivalent literally, the equivalent must necessarily have been within the grasp of the PHOSITA. In other words, if the PHOSITA possessed the invention at the time the amendment was made, then the patentee is foreclosed from asserting equivalency. Just as was the case with the public dedication rule, the foreseeability standard is truly about assessing whether the inventor was in possession of the asserted equivalent but failed to claim it.

The Federal Circuit has since made foreseeability an even more stringent standard, rendering rebuttal of the *Festo* presumption effectively impossible unless the asserted equivalent is solely the result of later-developed technology. In yet another decision in the *Festo*

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103. See, e.g., *Merck & Co. v. Mylan Pharms., Inc.*, 190 F.3d 1335, 1338–42 (Fed. Cir. 1999).

104. See, e.g., *Conoco, Inc. v. Energy & Env'tl. Int'l, L.C.*, 460 F.3d 1349, 1364 (Fed. Cir. 2006).

105. 535 U.S. 722 (2002).

106. *Id.* at 740–41.

107. *Id.* The Supreme Court's *Festo* decision is inconsistent regarding whether the rebuttal of the presumption should be assessed as of the time of the application or the time of the amendment. Compare *id.* at 738 (amendment) with *id.* at 740 (application). On remand, the Federal Circuit clarified that the appropriate time is when the applicant amended the claim. *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 344 F.3d 1359, 1365 n.2 (Fed. Cir. 2003) (en banc).

saga,<sup>108</sup> the Federal Circuit concluded that an asserted equivalent is foreseeable “if it is disclosed in the pertinent prior art in the field of the invention. In other words, an alternative is foreseeable if it is known in the field of the invention as reflected in the claim scope before amendment.”<sup>109</sup> The variant is foreseeable even if one of ordinary skill in the art would not recognize that it was an equivalent at the time the application is filed.<sup>110</sup> So long as the variant existed at the time of the application, even if the PHOSITA would not view it as acceptable for use in the invention, then it is foreseeable, and thus prosecution history estoppel will preclude equivalency. Now, the patent drafter is required to reach beyond conventional knowledge when filing an application or amendment to anticipate all potential uses of extant technologies that may be relevant to the claimed invention. The only way for an invention to be unforeseeable under this standard is if the technology is developed subsequent to the patent application.

While this result is completely consistent with the Federal Circuit’s view that the doctrine of equivalents should only be available to combat later-developed technologies, the reasoning underlying the court’s conclusion remains perplexing. If at the time of the application (or amendment), no one knows that a technology will function in an equivalent fashion, it seems counter to the reasoning of the Supreme Court’s *Festo* decision to preclude equivalency.<sup>111</sup> Yet, the Federal Circuit has said just that:

Prosecution history estoppel would apply only if the applicant in adopting the narrowing amendment was aware or should have been aware that the equivalent

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108. After the initial panel decision, the Supreme Court granted certiorari, vacated the judgment, and remanded the case in light of *Warner-Jenkinson*. On remand from the Supreme Court, the panel again issued a decision, but the Federal Circuit reheard and decided the case en banc; subsequently, the Supreme Court reviewed the case substantively. After the Supreme Court’s decision, the en banc Federal Circuit remanded the case to the district court, who granted summary judgment of no infringement. The case then returned again to the Federal Circuit. See *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 493 F.3d 1368, 1374–76 (Fed. Cir. 2007) (tracing the case’s procedural history).

109. *Id.* at 1379.

110. *Id.* at 1380 (rejecting application of both the function-way-result and insubstantial differences tests to determine whether one skilled in art would have recognized equivalency); *id.* at 1383 (Newman, J., dissenting) (characterizing majority as holding “an existing structure need not be recognized, or even recognizable, as an equivalent at the time of the patent application or amendment, in order to be ‘foreseeable’ if it is later used as an equivalent”).

111. See *Festo*, 535 U.S. at 740 (“The patentee, as the author of the claim language, may be expected to draft claims encompassing *readily known* equivalents . . . . There are some cases, however, where the amendment cannot reasonably be viewed as surrendering a particular equivalent. The equivalent may have been unforeseeable at the time of the application . . . .” (emphasis added)). It is difficult to understand how the use of an aluminum sleeve was “readily known” if no one at the time of the amendment believed that aluminum would work.

would be an equivalent to the claimed feature for purposes of the invention as defined by the amended claim. This in itself would be rare, and it would be rarer still that the applicant, aware of such an alternative, would have failed to claim it in the first instance. An alternative would be foreseeable only in the limited circumstances where the alternative was inadvertently omitted and was a candidate for a reissue patent.<sup>112</sup>

Moreover, the court brushes aside the potential temporal dynamic at play with equivalency. As Judge Newman persuasively argued in dissent, a use of an extant technology may not be fully appreciated until a later date.<sup>113</sup> The court would preclude equivalency in this context. Specifically, the court reasoned:

[S]ince the only difference between the function/way/result test for infringement and Festo's test for prosecution history estoppel is the difference in timing — the function/way/result test for infringement being applied at the time of infringement and the function/way/result test for prosecution history estoppel being applied at the time of amendment — Festo's proposed test would lead to endless bickering over whether the equivalent satisfied the function/way/result test.<sup>114</sup>

The timing of the inquiry, however, can often be the determinative factor in the analysis of both literal infringement and infringement under the doctrine of equivalents.<sup>115</sup> One of the key issues before the Supreme Court in *Warner-Jenkinson* was the point in time at which equivalency should be determined — at the time of the application or at the time of infringement. The Court chose the latter.<sup>116</sup> The Federal Circuit, in a sweeping generalization, has ignored the importance of the temporal dimension of equivalency in light of pragmatic complications, none of which seem terribly more complex than other issues of patent infringement and validity.

In its current incarnation, the presumption of prosecution history estoppel can only be rebutted if the relevant equivalent was developed after the filing date, thereby further confining the availability of the

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112. *Festo*, 493 F.3d at 1380–81.

113. *See id.* at 1384 (Newman, J., dissenting).

114. *Id.* at 1381 (majority opinion).

115. Lemley, *supra* note 16, at 103–04.

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

doctrine of equivalents to later-developed technology. If the public was in possession of the equivalent — even if it did not recognize the equivalency at the time of the application — prosecution history estoppel cannot be rebutted and equivalency is precluded.

The second means for rebutting the *Festo* presumption of complete surrender of all equivalents, the tangential relationship test,<sup>117</sup> is a bit more curious with respect to possession. Seemingly, the inventor may have been in possession of the asserted equivalent. Instead, the Court appeared to focus on the intent of the applicant in making the relevant amendment: if the amendment bears little to no relationship to the asserted equivalent, the surrender of subject matter cannot be considered volitional. The patent applicant cannot be said to have given up that equivalent in these circumstances. For example, the amendment and the asserted equivalent may relate to different aspects of the invention.<sup>118</sup> The tangential relationship test, therefore, seems to suggest that the given equivalent was not in the inventor's possession in the sense that she did not contemplate that she had given up coverage relating to the asserted equivalent. It does provide one avenue, however, through which the paradox may be avoided.

#### 4. Specification Estoppel

A patentee can also lose the ability to assert equivalency if she has surrendered the relevant subject matter in the specification itself.<sup>119</sup> If an applicant distinguishes the prior art or asserts why her invention is better than the prior art, she cannot use the doctrine of equivalents to recapture that surrendered subject matter. This surrender operates in an estoppel-like fashion, although without the constraints found within prosecution history estoppel, such as a requirement that the surrender be due to an argument or amendment made for reasons related to patentability.<sup>120</sup>

The court has articulated one exception to this rule of surrender: if the asserted equivalent is unforeseeable, then equivalency will not be precluded. This apparent exception is articulated in *Abraxis Biosci-*

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117. See *supra* note 106 and accompanying text.

118. See *Biagro W. Sales, Inc. v. Grow More, Inc.*, 423 F.3d 1296, 1306 (Fed. Cir. 2005).

119. See, e.g., *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1345–46 (Fed. Cir. 2001) (precluding equivalency as a result of disclaimers made in specification); *Vehicular Techs. Corp. v. Titan Wheel Int'l, Inc.*, 212 F.3d 1377, 1378 (Fed. Cir. 2000) (per curiam) (affirming grant of summary judgment of non-infringement because accused device failed to perform back-up function found in specification but not claims); *Vehicular Techs. Corp. v. Titan Wheel Int'l, Inc.*, 141 F.3d 1084, 1091 (Fed. Cir. 1998) (vacating grant of preliminary injunction for same reason).

120. See Holbrook, *Substantive Versus*, *supra* note 27, at 139–44 (discussing evolution of this doctrine and problems with its application, particularly in contrast to prosecution history estoppel).

*ence, Inc. v. Mayne Pharma (USA) Inc.*<sup>121</sup> In this case, the court limited the literal scope of the claims to exclude structural homologues of the claimed chemical solely because of the disclosures in the specification.<sup>122</sup> Accordingly, there was no literal infringement, but the court nevertheless determined that there was infringement under the doctrine of equivalents because the accused compound's structure was unforeseeable at the time the application was filed.<sup>123</sup> Although there is some discussion of the prosecution history, the argument for surrender used in the claim construction came exclusively from the specification.<sup>124</sup> The unforeseeability of the accused device, therefore, served as an exception to language of surrender contained in the *specification*, demonstrating that the concept of unforeseeability is relevant not only in the context of prosecution history estoppel but also specification-based estoppel.

The possession paradox is therefore confirmed through this limitation on the doctrine of equivalents as well. Language of surrender in the specification will be used to limit the doctrine of equivalents under the theory that the patentee could have claimed such embodiments, but instead surrendered them implicitly through the language disavowing claim scope. This disavowal can be countered, however, if the equivalent was unforeseeable, affording the inventor protection for embodiments she did not, and could not, possess.

##### 5. Unforeseeability as the Only Limit on Equivalency

The Federal Circuit, perhaps unintentionally, has limited the doctrine of equivalents almost exclusively to later-developed technologies. Judge Rader of the Federal Circuit has taken the next step, espousing the view that foreseeability should be the singular limit on the doctrine of equivalents in lieu of the hodgepodge of limits previously discussed.<sup>125</sup> If adopted, Rader's view would formalize the paradox.

He expressly articulated this view in his concurrence in *Johnson & Johnston*,<sup>126</sup> the en banc case that confirmed the bright-line public dedication rule. Specifically, Judge Rader advocated the following rule: "the doctrine of equivalents does not capture subject matter that

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121. 467 F.3d 1370 (Fed. Cir. 2006).

122. *Id.* at 1376–78.

123. *Id.* at 1381–82.

124. *Id.*

125. See *Johnson & Johnston Assocs. Inc. v. R.E. Serv. Co.*, 285 F.3d 1046, 1056 (Fed. Cir. 2002) (en banc) (Rader, J., concurring); see also *Planet Bingo, LLC v. Gametech Int'l, Inc.*, 472 F.3d 1338, 1344 (Fed. Cir. 2006) (Rader, J., writing for the majority and stating "[t]he doctrine [of equivalents] does provide additional coverage for the exclusive right to protect a patent holder in the event of an unforeseeable change").

126. 285 F.3d at 1056 (Rader, J., concurring).

the patent drafter reasonably could have foreseen during the application process and included in the claims.”<sup>127</sup> Judge Rader reasoned:

A foreseeability bar thus places a premium on claim drafting and enhances the notice function of claims. To restate, if one of ordinary skill in the relevant art would reasonably anticipate ways to evade the literal claim language, the patent applicant has an obligation to cast its claims to provide notice of that coverage. In other words, the patentee has an obligation to draft claims that capture all reasonably foreseeable ways to practice the invention. The doctrine of equivalents would not rescue a claim drafter who does not provide such notice.<sup>128</sup>

In Judge Rader’s view, if the PHOSITA were in possession of the variant at the time the application was filed, the patentee should draft claims covering those variations. Only if the variant were unforeseeable — not in the PHOSITA’s possession — would the doctrine of equivalents be available.

Judge Rader further advocated the primacy of foreseeability by denigrating the “tangential relationship” rebuttal of prosecution history estoppel in *Cross Medical Products, Inc. v. Medtronic Sofamor Danek, Inc.*:

In my view, the tangential rebuttal principle exacerbates the policy deficiencies of the doctrine of equivalents. Upon invoking tangentiality, the patentee has already admitted that the equivalent falls within the scope of surrendered subject matter. Further, if the case permitted, any patentee would invoke the primary “foreseeability” rebuttal factor. Thus, an invocation of “tangentiality” often admits that the equivalent was both within the scope of the surrender and foreseeable at the time of prosecution. In other words, the patent drafter could have claimed the surrendered and foreseeable technology, but declined to do so.<sup>129</sup>

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127. *Id.*

128. *Id.* at 1057.

129. 480 F.3d 1335, 1347 (Fed. Cir. 2007) (Rader, J., concurring). Tellingly, as of this writing, no patentee has been successful in rebutting the *Festo* presumption in the Federal Circuit on the basis of unforeseeability, while a few have been successful using the tangential relationship test. See *Regents of Univ. of Cal. v. Dakocytomation Cal., Inc.*, 517 F.3d 1364, 1378 (Fed. Cir. 2008); *Primos, Inc. v. Hunter’s Specialties, Inc.*, 451 F.3d 841, 849

In Judge Rader's view, all of these limits on equivalency reduce to one question: was the equivalent foreseeable? If so, then the patentee could have claimed the equivalent literally and she should therefore be precluded from obtaining patent protection now. Judge Rader relies upon notions of public notice and patentees being the lowest cost avoiders to reach this conclusion: as between the public and the patentee, the patentee should bear the burden of her failure to adequately claim known embodiments.<sup>130</sup> Judge Rader fails to offer a normative justification, however, for why a patentee should be entitled to protection against these later-developed technologies that were by definition not within her possession at the time that she filed her application.

*C. The Paradox: The Patent Covers What the Inventor Did Not Possess*

The Federal Circuit's focus on later-developed technology and foreseeability limits on the doctrine of equivalents result in a situation where the patentee receives protection for something that she did not invent — i.e., did not possess. This state of affairs is paradoxical to the underlying basis of the patent system: patentees receive protection for their inventions. This situation runs counter to the doctrines that tailor literal claim scope to the inventor's contribution to the art, as disclosed in the patent specification.<sup>131</sup>

The court has also failed to consider the consequences of this state of the law on patentees' incentives to innovate. Patent owners now have perverse incentives: they are punished if they fail to claim that which they possessed at the time of the application, requiring greater upfront and perhaps unwarranted prosecution costs given the

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(Fed. Cir. 2006); *Insituform Techs., Inc. v. CAT Contracting, Inc.*, 385 F.3d 1360, 1370–71 (Fed. Cir. 2004). Therefore, Judge Rader's views are, so far, at odds with the court's apparent views of the role of the tangential relationship test. For an example of a case in which the tangential relationship test was not successful in rebutting the *Festo* presumption, see *Biagro Western Sales, Inc. v. Grow More, Inc.*, 423 F.3d 1296, 1306 (Fed. Cir. 2005).

130. *Cross Med. Prods. v. Medtronic Sofamor Danek, Inc.*, 480 F.3d 1335, 1347 (Fed. Cir. 2007) (reasoning that when tangentiality is invoked, "the patent drafter could have claimed the surrendered and foreseeable technology, but declined to do so," and that the tangential rebuttal "undermines principles of public notice"); see also *Sage Prods., Inc. v. Devon Indus., Inc.*, 126 F.3d 1420, 1425 (Fed. Cir. 1997) ("[A]s between the patentee who had a clear opportunity to negotiate broader claims but did not do so, and the public at large, it is the patentee who must bear the cost of its failure to seek protection for [a] foreseeable alteration of its claimed structure.").

131. Cf. *Merges & Nelson*, *supra* note 42, at 857 ("One should note that these decisions, while we discuss them here under equivalents doctrine, come into conflict with the enablement principles discussed earlier. If one adheres to the doctrine that limits claims to what is enabled by the disclosure, one would think that the doctrine of equivalents would distinguish between allegedly infringing devices that used 'new technologies' basically to get around the claims from those that used the technologies to do something significantly better. In some cases, this distinction does not seem to have been made." (footnote omitted)).

uncertainties of the prosecution process, of patent litigation, and of the ultimate value of the invention contained within the patent. In terms of the value of the patent, however, patent owners may be granted a pure windfall when they are allowed control over advances in the field that they did not possess. It would seem that this is not a powerful incentive to innovate; from the *ex ante* perspective, these advances are unforeseeable and unknowable.<sup>132</sup> This information gap results in the *ex ante* incentive being discounted considerably.<sup>133</sup> The patentee would know, however, that she is entitled to protection for later advances, whatever they may be. The patent acts like an insurance policy in that regard, protecting the central aspect of the invention and also affording protection for minor deviations.<sup>134</sup> Yet, if protection is only for later-developed, unforeseeable equivalents, it is hard to place a value on this protection at the time the application is filed.

The protection for later-developed technologies would seem justifiable only under a prospect view of the patent system — a view that patents allow the inventor to coordinate further developments of the technology, and eventual commercialization of it, in a manner analogous to the use of prospects to explore the mineral potential of real property.<sup>135</sup> But even prospect theory fails to explain the paradox. Protection is denied to those things most closely related to the property right — those foreseeable to the inventor — and only afforded to those further away.<sup>136</sup>

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132. Cf. Shyamkrishna Balganes, *Foreseeability and Copyright Incentives*, 122 HARV. L. REV. 1569 (2009) (making a similar argument regarding copyright law).

133. See Meurer & Nard, *supra* note 31, at 1955 (“Patent applicants would not refine their claims to cover these equivalents, and inventors’ incentives are not much affected by a minute probability of loss of effective patent protection.”).

134. Cotropia, *supra* note 63, at 174–75.

135. See Kitch, *supra* note 20. Professors Merges and Nelson analogize Kitch’s prospect view of the patent system to a property owner’s constructive possession of minerals that may be produced from her land:

Like an exclusive claim to the minerals that may be produced from a plot of land, Kitch emphasized that patents are granted *after* invention but *before* commercialization. According to Kitch, this has two advantages: (1) it allows “breathing room” for the inventor to invest in development without fear that another firm will preempt her or steal her work; and (2) it allows the inventor to coordinate her activities with those of potential imitators to reduce inefficient duplication of inventive effort. This amounts to granting rights over an unexplored pool, with the right-holder being permitted to charge for access to various parts of the pool.

Merges & Nelson, *supra* note 42, at 871 (emphasis in original) (footnote omitted).

136. I confess my disagreement with the prospect theory of patents. I agree with many of the criticisms of this theory offered by others. See generally Lemley, *Justifications*, *supra* note 21 (expressing general disagreement for *ex post* justifications for intellectual property rights that defend these rights on the basis of their incentives to control already-created works). Moreover, it seems that the prospecting function of patents is a result of the patent system and not a reason for its existence. Consequently, there is a danger in allowing prospect-based views to overly influence the evolution of patent law. Prescriptive use of this viewpoint would create a feedback loop in the law that is likely to cause a bias toward treat-

The Federal Circuit has yet to reconcile this paradox. The following Part explores various rationales and theories for the doctrine of equivalents to see if any of them can resolve the paradox. Ultimately, they do not.

#### IV. FAILURE OF CURRENT THEORIES TO RESOLVE THE PARADOX

Courts and commentators have offered a number of theories to justify the doctrine of equivalents. The three primary ones are: correcting claims after the patent has issued, promoting efficiency given the ex ante uncertainty during the patent prosecution process, and ensuring fairness to preserve the appropriate incentives under the patent system. The following Part considers each of these justifications and finds that, at present, all are unsatisfactory in resolving the possession paradox.

##### *A. Claim Correction*

One argument to support the use of the doctrine of equivalents is that it functions to correct errors in the claims made during the prosecution of the patent. The process before the USPTO is an imperfect one, and it is difficult, if not impossible, for the applicant to get every detail correct during those proceedings. The doctrine of equivalents therefore works like an insurance policy: even if the patent attorney did not draft everything perfectly, the doctrine can step in to protect the patentee by extending the right to exclude to equivalents.<sup>137</sup>

This justification for the doctrine of equivalents is not persuasive. To begin, there are administrative mechanisms that allow a patent holder to correct mistakes in the patent.<sup>138</sup> If the mistake is a typographical error, with no impact on the scope of the patent, a patent

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ing patents increasingly like real property. Such reflective dynamics can be seen in other areas of intellectual property, generally with the result being greater property-like protection for rights holders without an accompanying weighing of the public interest. *See, e.g.*, James Gibson, *Risk Aversion and Rights Accretion in Intellectual Property Law*, 116 *YALE L.J.* 882 (2007).

137. *See* Mark A. Lemley & Kimberly A. Moore, *Ending Abuse of Patent Continuations*, 84 *B.U. L. REV.* 63, 77–78 (2004) (“It makes some sense for the law to permit correction of claim drafting errors . . . [T]he doctrine of equivalents exists to prevent a patent owner from losing effective protection because she did not draft claims that effectively cover what she invented.”).

138. *See* *Johnson & Johnston Assocs. Inc. v. R.E. Service Co.*, 285 F.3d 1046, 1059 (Fed. Cir. 2002) (en banc) (Rader, J., concurring) (“The doctrine of equivalents should not rescue claim drafters who fail to give accurate notice of an invention’s scope in the claims. The Patent Act supplies a correction process for applicants who have claimed ‘more or less than [they] had a right to claim in the patent.’ 35 U.S.C. §§ 251, 252 (2001). The doctrine of equivalents need not duplicate the statute’s means of correcting claiming errors.” (alteration in original)).

holder can file for a certificate of correction.<sup>139</sup> At a more substantive level, patentees can request reissuance of their patent if there is some error that was made without deceptive intent.<sup>140</sup> In fact, if the patentee requests reissuance within two years after the patent issues, the patentee can expand the scope of her patent claims.<sup>141</sup> Moreover, through the use of continuation applications,<sup>142</sup> a patent applicant can keep her application active over a long period of time. While it reduces the duration of her patent,<sup>143</sup> it does allow her to craft claims at a later date that can cover later advancements, so long as there is adequate support in the specification.<sup>144</sup>

Due to the availability of other mechanisms to correct errors in claim drafting, this is not a persuasive justification for the doctrine of equivalents. Moreover, this basis for equivalency fails to reconcile the paradox. The doctrine is in fact wholly inadequate if the purpose is to correct errors in claim drafting. Any error would arise from a failure to claim existing advancements, not later developments; yet protection is only afforded for these later developments. Even a perfect patent attorney could not craft a patent claim that could enable a later-

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139. 35 U.S.C. § 255 (2006).

140. *Id.* § 251.

141. *Id.* § 251 para. 4. The ability to expand the scope of the claims is subject to two important limitations. First, the Patent Act affords intervening rights to third parties who may infringe the reissued patent but who were not infringing the originally issued patent. *See id.* § 252 para. 2 (2006). *See generally* Timothy R. Holbrook, *Liability for the "Threat of a Sale": Assessing Patent Infringement for Offering to Sell an Invention and Implications for the On-Sale Patentability Bar and Other Forms of Infringement*, 43 SANTA CLARA L. REV. 751, 768–70 (2003) (explaining that the Patent Act provides third parties with both absolute and equitable intervening rights). Second, the recapture rule constrains the ability of a patent holder to expand the scope of her claims through reissuance: if the patentee surrendered claim scope while originally pursuing patent protection at the USPTO, she cannot use the reissuance proceeding to “recapture” that surrendered subject matter. *See, e.g.,* Medtronic, Inc. v. Guidant Corp., 465 F.3d 1360, 1372–73 (Fed. Cir. 2006) (“Under the ‘recapture’ rule, the deliberate surrender of a claim to certain subject matter during the original prosecution of the application for a patent ‘made in an effort to overcome a prior art rejection’ is not such ‘error’ as will allow the patentee to recapture that subject matter in a reissue.”). This doctrine acts in many ways like the doctrine of prosecution history estoppel. The key difference, however, is that the application of prosecution history estoppel results in a finding of non-infringement, whereas the application of the recapture rule results in the invalidation of the relevant claim. *See id.* at 1373.

142. 35 U.S.C. § 120 (2006).

143. The term of a patent presently is twenty years from the date the patent application is filed. *Id.* § 154(a). If the applicant uses various procedural techniques at the patent office to delay issuance, the term will be reduced accordingly. For example, if the process takes seven years, the term of the patent will be reduced to thirteen years.

144. Some have thought that applicants abuse the continuing application system. *See* Lemley & Moore, *supra* note 137 (explaining the pervasive misuse of continuation applications). The USPTO implemented regulations to constrain the use of continuations and requests for continued examinations, most of which were affirmed on appeal by the Federal Circuit. *See* *Tafas v. Doll*, 559 F.3d 1345 (Fed. Cir. 2009), *vacated* No. 2008-1352, 2009 WL 1916498 (Fed. Cir. July 6, 2009) (en banc). The USPTO subsequently rescinded these rules. *See* Press Release, USPTO, USPTO Rescinds Controversial Patent Regulations Package Proposed by Previous Administration (Oct. 8, 2009), *available at* [http://www.uspto.gov/news/09\\_21.jsp](http://www.uspto.gov/news/09_21.jsp).

developed technology. Any claim that did literally cover the later-developed technology would need to be construed narrowly to exclude such an unforeseen development or else it would be invalid as not being enabled. Consequently, the claim correction account of the doctrine of equivalents fails to provide a basis for affording protection to the patentee for something she did not possess.

### *B. Efficiency Grounds and Refinement Theory*

Commentators have also grounded the doctrine of equivalents on a separate basis related to the claim correction rationale. Under their explanations, the doctrine of equivalents is justified on efficiency grounds. These related explanations recognize that it is difficult to draft claims *ex ante* that adequately capture the inventor's creation. But instead of being worried about subsequent claim correction, this account of the doctrine notes that it would be costly and inefficient to force all patent applicants to expend the resources to try to draft "perfect" claims.<sup>145</sup> Given that the vast majority of patents are never litigated,<sup>146</sup> there is no sense in requiring large up-front expenditures for each and every patent applicant.<sup>147</sup> The doctrine of equivalents, therefore, is efficient because it channels issues of claim scope to the courts only in the cases that matter — the ones that are litigated.<sup>148</sup> Although there is a lack of certainty around these patents, the doctrine of equivalents arguably is efficient because it avoids the wasteful use of resources early in the application process on patents that are valueless.

But like claim correction, this view of the doctrine fails to explain the protection afforded for later-developed technologies. Even without the doctrine of equivalents, patent applicants would be unable to capture unforeseeable developments. They would not know to draft the claim accordingly, and the patent disclosure would be insufficient to support any claim that would cover such a development.

Professors Michael Meurer and Craig Nard offer a slightly different efficiency-based rationale for the doctrine of equivalents. They reject what they dub the "fairness" and "friction" theories that justify the doctrine of equivalents and posit the "refinement" model.<sup>149</sup> Meurer and Nard apply a game theoretic model with the inventor and a competitor serving as the two players. The inventor has the option to

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145. See Doug Lichtman, *Substitutes for the Doctrine of Equivalents: A Response to Meurer and Nard*, 93 GEO. L.J. 2013, 2020–23 (2005).

146. See Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1501 (2001) ("Based on these numbers, it is reasonable to estimate that at most only about two percent of all patents are ever litigated, and less than two-tenths of one percent of all issued patents actually go to court.").

147. See Lichtman, *supra* note 145, at 2023.

148. See *id.*

149. See Meurer & Nard, *supra* note 31, at 1983–94.

invent, and if he does, he has the further option of refining the scope of the patent; the competitor can react to the choices of the inventor. All of these choices depend on their attendant costs and benefits. In their view, the doctrine of equivalents operates positively when the costs of invention and of refining the claim are both high; the cost of refinement or loss of monopoly profits from a competitor would dampen innovation incentives absent the doctrine of equivalents.<sup>150</sup> In other contexts, however, Meurer and Nard contend that the doctrine plays little role; instead, reliance on proper claim drafting and utilization of reissue proceedings can adequately protect inventors.<sup>151</sup> Although they fall short of calling for the doctrine's abolition,<sup>152</sup> they do have a view of the doctrine that is inconsistent with the current state of the law.

Their view of the doctrine of equivalents is problematic for a variety of reasons.<sup>153</sup> Most importantly, this view of the role of claim drafting vis-à-vis the doctrine assumes that the applicant could draft claims that would cover an equivalent, which means that it does not account for the role of later-developed technology. Under their definition of refinement, Meurer and Nard assume that the patent's specification enables both the set of embodiments literally covered by the patent and the set equivalently covered.<sup>154</sup> Even in a reissuance proceeding, a patentee must show sufficient support in the original disclosure to justify broader claim scope: the broader claims must be enabled by the original specification at the time the initial patent application was filed.<sup>155</sup> Meurer and Nard expressly "reject the popular notion that the [doctrine of equivalents] is especially appropriate in the case of unforeseeable, later-developed technology because this justification focuses on the wrong question."<sup>156</sup> Because the doctrine will neither save refinement costs nor maintain the ex ante innovation incentive, they believe the courts are misguided in using the doctrine in this fashion.<sup>157</sup>

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150. *Id.* at 1989.

151. *Id.* at 1951.

152. *See id.* at 1995 ("[W]e think there is a socially valuable role for both reissues and the [doctrine of equivalents]."). *But see* Joshua D. Sarnoff, *Abolishing the Doctrine of Equivalents and Claiming the Future After Festo*, 19 BERKELEY TECH. L.J. 1157 (2004).

153. *See generally* Lichtman, *supra* note 145 (criticizing the patent prosecution process).

154. Meurer & Nard, *supra* note 31, at 1983–84.

155. *See* 35 U.S.C. § 251 para. 1 (2006) ("No new matter shall be introduced into the application for reissue."); *In re Amos*, 953 F.2d 613, 618 (Fed. Cir. 1991) ("Thus, the inquiry that must be undertaken to determine whether the new claims are 'for the invention' originally disclosed . . . is to examine the entirety of the original disclosure and decide whether, through the 'objective eyes' of the hypothetical person having ordinary skill in the art, an inventor could fairly have claimed the newly submitted subject matter in the original application, given that the requisite error has been averred.").

156. Meurer & Nard, *supra* note 31, at 1955.

157. *See id.*

Of course, the courts have effectively limited the doctrine's use to this setting only. Moreover, the authors do not explain their trust in prosecution history estoppel<sup>158</sup> despite their rejection of one of its key components: rebuttal by unforeseeable equivalents. By its proponents' own admission, their justification for the doctrine of equivalents is not descriptively accurate and prescriptively cannot resolve the paradox. It merely eliminates it. In the eyes of the authors, therefore, later-developed technology, even if insubstantially different from that of the inventor, would fall outside the scope of the patent. This conclusion is unsurprising, given the authors' dismissal of fairness rationales for the doctrine. These fairness rationales, however, retain traction, just as they do in property law's view of constructive possession. The following Part examines the fairness principles.

### *C. Fairness to the Inventor*

The primary justification for the doctrine of equivalents offered by the courts has been fairness: limiting a patent to its literal terms would allow competitors to easily circumvent the patent by making trivial changes to their device that avoid the literal language of the claim yet result in a product that is, in essence, the same as the invention.<sup>159</sup> This is particularly true given the ambiguities of language. A patent attorney attempts to translate a physical construct into words that capture the object. But words are inherently ambiguous.<sup>160</sup> The Supreme Court elaborated on this problem in *Festo*, where it noted:

[T]he nature of language makes it impossible to capture the essence of a thing in a patent application . . . . The language in the patent claims may not capture every nuance of the invention or describe with complete precision the range of its novelty. If patents were always interpreted by their literal terms, their value would be greatly diminished. Unimportant and insubstantial substitutes for certain elements could defeat the patent, and its value to inventors could be destroyed by simple acts of copying. For this reason, the clearest rule of patent interpretation,

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158. *See id.* at 1988.

159. *See Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 607 (1950).

160. Meurer and Nard view fairness and language ambiguity as distinct concerns. *See Meurer & Nard, supra* note 31. I view them as the same. From the perspective of the patent attorney, capturing the invention in words is inherently imperfect. For competitors, language creates opportunities to evade the patent by relying on those inherently ambiguous words. Thus, a policy of fairness for the patentee emerges as a response in both contexts due to the limits of language.

literalism, may conserve judicial resources but is not necessarily the most efficient rule.<sup>161</sup>

The fairness rationale provides a fairly solid normative basis for the doctrine of equivalents, but it does not provide an adequate explanation for the paradox. Indeed, the Supreme Court's view suggests that it believes competitors, absent equivalency, will game the system by tinkering around the edges of the patent claim in some insignificant way. While that is definitely a ground for concern, it does not explain why such tinkering only becomes relevant in the context of unforeseen technology.

Moreover, this perspective of the doctrine divorces the patent disclosure from the right to exclude by affording protection for something that the inventor did not possess. Using later-developed technology suggests that the competitor has improved upon the patentee's invention in a manner that might be significant and perhaps patentably distinct. A fairness rationale does not explain why the patentee should be able to ensnare such an improvement within the scope of her patent. Of course, the change in technology could be exogenous to the patentee's field. In that situation, fairness may justify such protection.<sup>162</sup>

In sum, the three primary justifications for the doctrine of equivalents fail to provide a persuasive basis for reconciling the current paradox of affording protection to the patent holder for something that she did not possess. As such, a more accurate normative account is necessary in order to explain the current state of the doctrine.

#### V. RESOLVING THE PARADOX — TYING EQUIVALENCY BACK TO THE DISCLOSURE

Neither the courts nor commentators have provided an adequate explanation for why the patentee is entitled to protection under the doctrine of equivalents for a device that she never invented. This Part offers two potential bases for resolving the possession paradox. One approach is rooted in the fairness justification for the doctrine of equivalents: it is fair to afford such protection to the patentee when a change outside of the patentee's field affects that field and her invention in a way that allows others to capture the essence of the invention by making trivial changes. An inventor cannot be required to foresee changes outside of her field, and the doctrine of equivalents should provide protection in those circumstances.

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161. *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 731–32 (2002).

162. *See infra* Part V.A.

The second basis involves anchoring the availability of the doctrine of equivalents to the scope of the patentee's disclosure in the following manner: if the patent disclosure enables the asserted equivalent at the time of infringement, then an accused device making use of later-developed technology is infringing. This approach ties the availability of equivalents to the disclosure of the patent document, but allows those teachings to grow over time. While the obligations of § 112 are assessed at the time of the application for the relevant patent, this approach would instead embrace a hindsight reconstruction of the inventor's contribution to the art for purposes of infringement by equivalents. If one reading the patent today would appreciate the trivial changes that could be made in light of current technology, then protection should be provided because the patentee has in essence taught that invention to the public.

*A. Later-Developed Technology is Covered Only if the Development is from Outside the Inventor's Field*

The present form of the doctrine of equivalents appears to provide a windfall to inventors, while denying them access to the doctrine when they possessed an equivalent variant of the invention at the time they filed their application. This windfall is not supported by the fairness rationale except in one context: when the technological development that has altered the importance of the patent claim's limitations comes from outside of the inventor's technological field. Changes may occur in one scientific field that have consequences and applications outside of that field. Chemists might be unaware of developments in robotics that would permit them to explore the potential efficacy of compounds more rapidly. Computer scientists may be unaware of changes in semiconductor technology that greatly enhance the functionality of computers. An inventor cannot, and should not, be held accountable for such changes. She therefore should be protected under the doctrine of equivalents when technological advances extraneous to her field impact the scope of her patents.

*Hughes* exemplifies this reconciliation of the paradox.<sup>163</sup> In *Hughes*, the invention related to a method for controlling the pointing of geosynchronous satellites. The patentee's method required that ground controllers manually fire jets to keep the satellite aligned. To do so, the controllers had to receive data from the satellite and run calculations on the ground in order to fire the jets at the appropriate time and for the appropriate length of time. All of this was done manually.<sup>164</sup> At the time the inventor created the method and filed his application, computer technology had not developed to a state where

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163. *Hughes Aircraft Co. v. United States*, 140 F.3d 1470 (Fed. Cir. 1998).

164. *Id.* at 1472–73.

it could be compartmentalized on a satellite.<sup>165</sup> Later, however, computers emerged that allowed remote control of the satellite, with calculations performed onboard without manual ground control.<sup>166</sup> The U.S. government's satellites used computer technology. The court concluded that those satellites nevertheless infringed the patent because a "subsequent change in the state of the art, such as later-developed technology, obfuscated the significance of [the] limitation at the time of its incorporation into the claim."<sup>167</sup> In this case, the later-developed technology came from outside the field of satellite control but created a sea change in that field. Equivalency in this context seems appropriate as a matter of fairness.

This approach fits seamlessly into the current doctrinal framework established by the Federal Circuit. On questions of foreseeability, for example, an equivalent would be unforeseeable if it resulted from developments outside the inventor's field. Similarly, this approach provides an explanation for the "tangential relationship" rebuttal of the *Festo* presumption of prosecution history estoppel and other surrender doctrines<sup>168</sup>: the inventor could not have contemplated such a surrender of subject matter because the matter is outside of her field. We do not use information outside of her field of endeavor when determining if her invention is nonobvious;<sup>169</sup> similarly, we would consider it difficult, if not impossible, for the inventor to have surrendered material outside of her field because she may not have known of its existence. Other limits on the doctrine of equivalents would remain untouched. The patentee cannot remove items from the public domain through the use of the doctrine of equivalents; she should also not be able to use the doctrine to cover embodiments disclosed in the specification but that she failed to claim — those embodiments clearly are within her field as she actually contemplated them.

Determining whether the later-developed technology is in the same field requires some line drawing, which can be difficult. But patent law already has a doctrine to deal with a related issue. When assessing whether an invention claimed in the patent is obvious in light of information in the public domain — the prior art — a decision

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165. *Id.* at 1475.

166. *Id.* ("Thus, the synchronism in the accused device is coordinated by the computer instead of by real-time execution of the command from the ground."); see also *Hughes Aircraft Co. v. United States*, 717 F.2d 1351, 1364–65 (Fed. Cir. 1983) ("Once an on-board computer became available . . . 'any intelligent engineer designing this [S/E] system would say 'Look, I don't need to send the value of that ISA position to the ground, it's right there in the spacecraft. I'll just key my firing signal to that on board the spacecraft.'").

167. *Hughes Aircraft*, 140 F.3d at 1475 (quoting *Sage Prods., Inc. v. Devon Indus., Inc.*, 126 F.3d 1420, 1425 (Fed. Cir. 1997)) (alteration in original).

168. See *supra* Part III.B. (discussing legal limitations on the doctrine of equivalents and means of overcoming them).

169. See, e.g., *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004).

maker can only use evidence from analogous arts.<sup>170</sup> A prior art reference, such as a previously issued patent or a previously published scientific article,<sup>171</sup> qualifies as analogous art if it comes from the same field of endeavor or if it “is reasonably pertinent to the particular problem with which the inventor is involved,” even if the reference is technically outside of the inventor’s field.<sup>172</sup> Courts could use this definition of “analogous art” to help them navigate the thorny question of whether the later-developed technology comes from within or without the inventor’s field. Of course, the analogous art test in the obviousness context is retrospective — the decision maker looks back to the problem that the inventor solved to determine whether the inventor would think to look outside of her field. The application in this context would be prospective, but it builds off of an existing framework for making that assessment.

### 1. Impact on the Inventor’s Incentives

Assessing whether this reconciliation is appropriate requires an analysis of its impact on the incentives of both the patent holder and downstream inventors. To begin, this rule would preclude the patentee from claiming an invention within her field if she did not possess it when she filed her application, since the rule only provides protection for developments made outside of her field. This creates an incentive for the patentee to continue to innovate and improve upon her invention because others also will have the opportunity to invent and patent improvements on it. Moreover, the original incentive to innovate would remain intact, buffered by the reduction in the risk that some later-developed technology outside of the field would eliminate the value of the patent or render the invention obsolete.<sup>173</sup>

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170. See *In re Clay*, 966 F.2d 656, 658–59 (Fed. Cir. 1992).

171. See 35 U.S.C. § 102 (2006).

172. *In re Clay*, 966 F.2d at 658–59.

173. See Cotropia, *supra* note 63, at 174 (“Extending a patent’s scope to include after-arrising equivalents will maintain the patent’s effective life in the face of such developments.”). A variation of this approach would be to afford protection to alterations that do not involve the point of novelty of the invention — the reason why the invention is patentable. Under this formulation, the patentee is not protected against changes to the “key” aspects of her invention and only against changes to the periphery. The incentive to continue to innovate on the central aspects of the invention would be maintained. In essence, this approach would take us back to central claiming, at least with respect to the doctrine of equivalents. In a different context, I have expressed concerns about the idea of a so-called point of novelty. See Timothy R. Holbrook, *Extraterritoriality in U.S. Patent Law*, 49 WM. & MARY L. REV. 2119, 2159–60 (2008) (criticizing the “patently distinctive” test). First, identifying what the point of novelty could be difficult. And most importantly, the point of novelty approach would fail to protect patentees against changes exogenous to their field that impact their invention, even that which may be the core of their invention, as the *Hughes Aircraft* cases demonstrate. See *supra* notes 163–67 and accompanying text. It would seem appropriate to place the burden on the patent applicant to maintain vigilance on developments in her field, whether those developments are directed to the core or the periphery.

## 2. Impact on the Incentive of Others to Improve the Invention

The doctrine of equivalents necessarily implicates the ability of others to improve upon the inventor's creation, a lauded aspect of the patent system.<sup>174</sup> By limiting the doctrine of equivalents to those later-developed technologies that occur outside of the technological field of the relevant patent, those within the field would be able to improve upon the patented invention and, if they could escape the literal scope of the claims,<sup>175</sup> could patent their invention and operate free of the earlier patent. The incentive to design around and improve upon the patented invention would thus remain intact.

## 3. Is the "Field of Endeavor" Approach an Apt Reconciliation of the Paradox?

This reconciliation may provide some coherency and grounding to the doctrine, but it does not answer the question of whether equivalency should be given an even broader application. While this approach offers a persuasive fairness rationale, it fails to resolve the possession paradox directly because it retains the current disconnect among patent disclosure, possession, and equivalency. The disclosures of the patent do not relate to the question of equivalency. This approach is thus theoretically unsatisfying.

### *B. Is the Accused Device Enabled by the Patent at the Time of Infringement?*

The first, narrow approach divorces the question of the scope of the patentee's right to exclude from the actual disclosures made in the patent document. An alternative approach, more consistent with the role of the patent's disclosure in demonstrating possession, would tie the availability of the doctrine of equivalents to the disclosure. This method finds its origins in the links among literal patent scope, enablement, and the reverse doctrine of equivalents.<sup>176</sup>

In the context of the doctrine of equivalents, the appropriate question would be whether the patent enables one with ordinary skill in the art to practice the asserted equivalent at the time of infringement. Infringement under the doctrine of equivalents currently is assessed at the time of infringement, which permits consideration of developments in the relevant technology. My alternative approach would

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174. See 35 U.S.C. § 101 (allowing patents on improvements); see also *State Indus., Inc. v. A.O. Smith Corp.*, 751 F.2d 1226, 1236 (Fed. Cir. 1985) ("One of the benefits of a patent system is its so-called 'negative incentive' to 'design around' a competitor's products, even when they are patented, thus bringing a steady flow of innovations to the marketplace.").

175. See *supra* notes 43–47 and accompanying text.

176. See *supra* notes 41–55 and accompanying text.

temporally shift the enablement analysis in the context of equivalency. Whereas courts and the USPTO assess enablement for validity purposes at the time of the application,<sup>177</sup> they would assess enablement for purposes of infringement under the doctrine of equivalents at the time of infringement. Because the later-developed technology, if enabled, would be viewed as within the inventor's possession at the time of infringement, it is appropriate to afford such protection to the patent holder. This approach would afford protection for advances outside of the inventor's field<sup>178</sup>: if those changes have altered the state of the art within the inventor's field, then they will be taken into account through the temporal shift. In this way, the enablement-based approach is far broader than the field-restricted approach.

Exploring the impact of the disclosure contemporaneously with the act of infringement presents of a number of benefits. First, it embraces hindsight effects. One problem in determining whether a patent claim is enabled for validity purposes is that the decision maker must step back in time and put himself in the position of the PHOSITA at the time the inventor filed her patent application. Adopting such a perspective requires the decision maker to ignore present-day context and insights. Such a perspective is required by other areas of patent law, and the resulting hindsight bias is the source of much doctrinal<sup>179</sup>

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177. *See, e.g.*, *W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1556 (Fed. Cir. 1983).

178. *See supra* notes 163–67 and accompanying text.

179. *See, e.g.*, *W.L. Gore*, 721 F.2d at 1553 (“To imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.”). The hindsight bias issue is particularly salient in the obviousness inquiry, where a decision maker must determine if the claimed invention would have been obvious “at the time the invention was made.” 35 U.S.C. § 103. The courts have developed a number of doctrines to combat such perceived bias. *See W.L. Gore*, 721 F.2d at 1553 (“[Secondary considerations of non-obviousness] can often serve as insurance against the insidious attraction of the siren hindsight when confronted with a difficult task of evaluating the prior art. Though the prior art evidence here pointed more in the direction of nonobviousness than obviousness, the objective evidence may tend . . . to reassure the decisionmaker.”); *see also In re Kahn*, 441 F.3d 977, 986 (Fed. Cir. 2006) (“The ‘motivation-suggestion-teaching’ requirement protects against the entry of hindsight into the obviousness analysis . . .”); *In re Oetiker*, 977 F.2d 1443, 1447 (Fed. Cir. 1992) (“The combination of elements from non-analogous sources, in a manner that reconstructs the applicant’s invention only with the benefit of hindsight, is insufficient to present a *prima facie* case of obviousness.”). The Supreme Court has recognized that these efforts can, at times, go too far. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007) (“The Court of Appeals, finally, drew the wrong conclusion from the risk of courts and patent examiners falling prey to hindsight bias . . . . Rigid preventative rules that deny factfinders recourse to common sense, however, are neither necessary under our case law nor consistent with it.”). Hindsight bias issues also present themselves in the various ex post assessments of foreseeability. *See, e.g.*, *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 493 F.3d 1368, 1385 (Fed. Cir. 2007) (Newman, J., dissenting) (“[T]he panel majority rules that the aluminum alloy shield was retrospectively foreseeable at the time of the amendment because it later was used as an equivalent, although it was not known to be equivalent and would not have been deemed equivalent at the time of the amendment. Hindsight is not foreseeability.”).

and academic<sup>180</sup> consternation. The benefit of my alternative approach is that it eliminates concerns of hindsight bias. In the enablement context, hindsight issues can develop as a result of two factors: the level of ordinary skill in the art may have changed over time and knowledge of possible uses and applications of the patented invention may have evolved.<sup>181</sup> In other words, a person reading the patent today could see a host of possibilities and applications for the technology that would not have been apparent when the application was filed.<sup>182</sup> In the current enablement inquiry to assess a patent claim's validity, these subsequent developments create problems for the decision makers, particularly in litigation, because enablement is assessed at the time of the patent application. In order to make that determination, a court or jury must step back in time and ignore the evolution of the technology, creating a bias in favor of a finding of validity.<sup>183</sup>

Use of enablement to determine equivalency would take into account such subsequent developments. The relevant question would be whether, at the time of infringement, the patent would have enabled the PHOSITA to make the accused device. If so, then there is infringement under the doctrine of equivalents. Although the inventor may not have possessed that embodiment at the time she filed her ap-

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Hindsight issues arise in claim construction and the enablement inquiry, but the courts have not addressed these problems. See Gregory N. Mandel, *Patently Non-Obvious: Empirical Demonstration That the Hindsight Bias Renders Patent Decisions Irrational*, 67 OHIO ST. L.J. 1391, 1442 (2006); see also Dan L. Burk & Mark A. Lemley, *Is Patent Law Technology-Specific?*, 17 BERKELEY TECH. L.J. 1155, 1199 (2002) (noting that "hindsight bias risks infecting the PHOSITA analysis in enablement and claim scope," yet the courts have failed to articulate rules to counter the bias).

180. See, e.g., Rebecca S. Eisenberg, *Obvious to Whom? Evaluating Inventions from the Perspective of PHOSITA*, 19 BERKELEY TECH. L.J. 885, 887 (2004) ("This concern about the corruption of judgments of nonobviousness by improper 'hindsight' is a strong theme in Federal Circuit opinions."); Mandel, *supra* note 179; Gregory Mandel, *Patently Non-Obvious II: Experimental Study on the Hindsight Issue Before the Supreme Court in KSR v. Teleflex*, 9 YALE J. L. & TECH. 1 (2006); Joseph Scott Miller, *Remixing Obviousness*, 16 TEX. INTELL. PROP. L.J. 237 (2008).

181. Lemley, *supra* note 16, at 102 ("Both the knowledge of the PHOSITA in a particular field and the meaning of particular terms to that PHOSITA will frequently change over time."); see also Mandel, *supra* note 179, at 1442.

182. Lemley, *supra* note 16, at 103 ("The meaning of technological terms is fluid. A term that means one thing to scientists at one time may mean something different later as understanding in the field increases.")

183. As Professor Mandel noted:

The impact of the hindsight bias will be greatest for technologies that are advancing the fastest. The greater the difference between the state of the art (and PHOSITA skill level) at the time of invention versus at the time obviousness is determined, the greater the influence of the bias. As technological progress is often fastest in the early stages of new technology development, the hindsight bias may be particularly influential in causing broad, early-stage patents to be improperly held to have been enabling. This effect is particularly troubling as it is exactly these types of patents that may cause the greatest limitations and inefficiencies for future technological advancements.

Mandel, *supra* note 179, at 1442–43.

plication, she effectively has put the public into possession of these subsequent developments by the disclosure within her patent.

This approach comports to some extent with the role of enablement in literal claim scope. As noted earlier,<sup>184</sup> literal infringement is not assessed by determining whether the patent enables the infringing device. The basis of comparison between the accused device and the patent is the claim. So the link between enablement and the accused device is one step removed due to the presence of the claim: we ask whether the patent disclosure enables the claim, and then whether the claim reads on the accused device. Effectively, one could say that if the claim reads on the accused device, then it enables it. That statement goes too far, however, given the peripheral nature of patent claims: generally, they cover elements of the accused device that are not listed in the patent.<sup>185</sup> The limitations of the claim are both necessary and sufficient for infringement; extra components do not remove the accused device from the scope of the claim.<sup>186</sup> As such, the patent disclosure may not enable certain aspects of the accused device that are not listed in the claim. For example, a claim for a method of washing a car that requires the step of wetting the car, soaping the car, and rinsing the car would be infringed by a car washing method that included the extra step of drying the car. Technically, the patent did not enable the entire accused process because it did not disclose the step of drying the car.

This problem of the peripheral nature of the claims is not present when determining infringement under the doctrine of equivalents. The doctrine is applied on a limitation-by-limitation basis.<sup>187</sup> The test is not whether the accused device overall is equivalent to the claimed invention but instead whether the accused device contains elements that are equivalent to the particular limitations in the claim. As such, asking whether the accused device is enabled by the patent disclosure is appropriate and possible in the equivalency context because the patent's specification will contain descriptions with respect to each claim limitation — otherwise, the claim would be invalid. If, taking into account advances within the field, the patent's specification enables the asserted equivalent, then there should be infringement.

The enablement-based approach would seemingly swallow the equivalency inquiry. There would be no need for the function-way-

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184. See *supra* notes 42–50 and accompanying text.

185. See *supra* notes 45–50 and accompanying text.

186. There are exceptions to this rule, such as when the patent claim uses the transitions “consisting of” or “consisting essentially of,” but the vast majority of patent claims do not rely upon this language.

187. See *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 29 (1997) (“[T]he doctrine of equivalents must be applied to individual elements of the claim, not to the invention as a whole.”); see also *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 935 (Fed. Cir. 1987) (en banc).

result, insubstantial differences, or known interchangeability tests.<sup>188</sup> If the patent enables the asserted equivalent, it is hard to imagine how the accused device would not satisfy these tests. While some of the limitations on the doctrine — such as prior art preclusion, prosecution history estoppel, and public dedication — would have some teeth, the others might fall by the wayside because, by definition, the inventor would not have been able to claim these later-developed advances that may yet be within the same field of endeavor. As such, doctrinally this approach would significantly alter the landscape of infringement by equivalents.

### 1. Impact on the Inventor's Incentives

While this approach is stylistically simple and theoretically cogent, in fact it would rework the doctrine of equivalents considerably. The enablement-based approach would gradually expand the scope of patent protection over time, allowing it to grow as knowledge in the art evolved. As a result, the patentee would ensnare more technology, likely including improvements that may emerge. The *ex ante* incentive to invent would be enhanced because a putative inventor would know that she would be able to exercise control not only over her actual invention but also over these later-developed advances. She would have the expectation of controlling advances over her technology, guaranteed by equivalency. The life expectancy of the patent would be extended effectively as the value of the disclosure grew over time. In essence, the patent would act as an insurance policy against obsolescence.<sup>189</sup> At a minimum, the incentive to innovate will be enhanced on the margins, particularly in a field where innovation proceeds rapidly.<sup>190</sup>

In some circumstances, this reward of protection may be appropriate, particularly for true breakthroughs.<sup>191</sup> The embodiments that an inventor could initially enable for a truly ground-breaking invention may be narrow. For example, the first inventor to discover a vaccine for RNA viruses achieved something significant in that field. Although he did not discover a vaccine that applies to *all* RNA viruses, the significance of his invention may justify a greater reward for his contribution even though, at the time of his application, the embodiments he could enable were limited.<sup>192</sup>

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188. See *supra* notes 66–70 and accompanying text.

189. Cotropia, *supra* note 63, at 175.

190. *Id.* at 194.

191. Patent law historically afforded greater protection under the doctrine of equivalents for “pioneering” inventions. See Merges & Nelson, *supra* note 42, at 848.

192. Indeed, the Federal Circuit limited this inventor to a claim that covered the vaccine for a particular chicken-based virus — unless there is an enormous market for this vaccine

Tying equivalency to the disclosure, by allowing the disclosure to grow over time, would provide the patentee considerable power to exercise control over subsequent technological advances.<sup>193</sup> This methodology would comport well with the prospect view of the patent system by affording the patent owner the ability to coordinate downstream improvements on her invention. Affording such broad protection to all inventions, however, might create significant obstacles to downstream improvers. Such control also may reduce the incentive for the original inventor to continue to improve and develop her invention.<sup>194</sup> The enablement-based approach to equivalency provides far greater power to the patentee to control subsequent developments, which may create a chokehold on innovation.

## 2. Impact on the Incentive of Others to Improve the Invention

As explained above, third parties attempting to improve upon a patented invention may run afoul of the patentee's right to exclude. Although notice may improve because of the elimination of the hindsight problem, third parties would more likely have to accept a license or risk infringement to improve upon the patentee's invention. The incentive to continue to innovate would be greatly diminished if the improver had to seek approval from the patentee to engage in her enterprise. Under current law, if the improver is found to infringe — even if under the doctrine of equivalents — not only will she have to pay damages for past infringement, but she likely will also be enjoined from future infringing activity. The robust form of the doctrine therefore could have severe consequences for those who wish to improve on the patented invention.<sup>195</sup>

The enablement-based approach to the doctrine of equivalents provides significant theoretical symmetry to patent law by linking the scope of the patent to the patent's disclosure, even for purposes of determining equivalency. However, it risks greatly expanding the scope of the patent at the potential expense of third parties. Thus, courts would have to rigidly enforce the extant limitations on the doctrine of equivalents to avoid overbreadth.

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against chickens, his reward seemed quite limited. *See In re Wright*, 999 F.2d 1557, 1562–64 (Fed. Cir. 1993).

193. *Cf. Lemley*, *supra* note 16, at 120 (“The protection provided by a patent may be hollow if it does not confer the ability to prevent logical applications of the principle of the invention to new and unforeseen circumstances.”).

194. Meurer and Nard have recognized aspects of this moral hazard, noting that the doctrine of equivalents may disincentivize what they dub preemptive refinement. Meurer & Nard, *supra* note 31, at 1990–91; *cf. Merges & Nelson*, *supra* note 42, at 877 (“Yet we have little faith in the imagination and willingness of a ‘prospect’ holder to develop that prospect as energetically or creatively as she would when engaged in competition. We are also skeptical about her ability to orchestrate development.”).

195. *Cf. Kane*, *supra* note 20, at 855–56.

## VI. DENYING PERMANENT INJUNCTIONS TO MITIGATE THE NEGATIVE CONSEQUENCES OF THE DOCTRINE OF EQUIVALENTS

Even with limitations on the doctrine of equivalents in place, criticism of the doctrine has been profound. The fear of affording too much protection and the lack of notice given to third parties undergird much of the criticism of this doctrine. The above proposals, particularly the enablement-based perspective, could create even greater problems of overprotection, although they may mitigate problems of hindsight bias. Regardless, assessing the literal scope of a patent is rife with uncertainty.<sup>196</sup> The use of the doctrine of equivalents to expand patent scope compounds this uncertainty, creating high transaction costs for third parties in assessing the scope of the patentee's right to exclude.

In light of this uncertainty, and the potential for this proposal to greatly expand the scope of patents under the doctrine of equivalents, it may be appropriate to reconsider the remedies available against those who infringe by equivalence. The following proposal would apply not only to the reconciliations I have posited above but also could be used under the current regime to address fears that the doctrine creates too much uncertainty.

The literature has failed to address why injunctive relief must be as readily available for infringement under the doctrine of equivalents as it is for literal infringement.<sup>197</sup> This need not be the case. One way to balance the interest in rewarding an inventor and protecting the interests of third parties would be to use a liability rule in lieu of a property rule when infringement is based on equivalents.<sup>198</sup> The full panoply of remedies would be available for literal infringement, but one who infringes a patent under the doctrine of equivalents would not be subject to a permanent injunction. Lost profits and other damages would remain available in either case.

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196. See sources cited *supra* note 56.

197. See, e.g., *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1516 (Fed. Cir. 1995) (en banc) (“[T]he jury found that the '746 patent was not invalid and that Warner-Jenkinson infringed under the doctrine of equivalents. . . . The district court then . . . entered a permanent injunction prohibiting Warner-Jenkinson from practicing ultrafiltration except at pressures above 500 p.s.i.g. and pHs above 9.01.”), *rev'd*, *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17 (1997). Professor Henry E. Smith has also suggested the use of liability rules in lieu of property rules in cases involving the doctrine of equivalents. See Henry E. Smith, *Intellectual Property as Property: Delineating Entitlements in Information*, 116 *YALE L.J.* 1742, 1818–19 (2007). For the distinction between property rules and liability rules, see Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 *HARV. L. REV.* 1089 (1972). Entitlements are protected by property rules when the remedy is injunctive relief and by liability rules when the remedy is damages. Calabresi & Melamed, *supra*, at 1116–17.

198. See Smith, *supra* note 197, at 1818–19.

Others have recognized that the use of liability rules can be appropriate when transaction costs are high.<sup>199</sup> As Professors Lemley and Weiser recognized, the uncertain scope of patent rights creates high transaction costs, which may suggest the use of a liability rule in certain situations.<sup>200</sup> There is no doubt that assessing the literal scope of a patent is a difficult task.<sup>201</sup> The doctrine of equivalents exacerbates this uncertainty, given that it is determined at the time of infringement based on the way the accused device functions. Assessing *ex ante* whether such a device would infringe is incredibly difficult.<sup>202</sup>

Another potential transaction cost that could arise is a bilateral monopoly. If a third-party improver wants to work within the field covered by the patent, she will have to get approval from the patent owner. There is no alternative; the improver must get permission from the patent owner or abandon her endeavor altogether. The ability of the patent owner to hold out on the deal could result in inefficient bargaining and ultimately a failure to negotiate a license.

Use of a liability rule in lieu of a property rule for future infringement could mitigate the perceived negative impacts of the doctrine on third parties, who may be more willing to engage in improving and designing around a patent if they know that they will not be precluded from practicing their improvement in the future. If the royalty is reasonable, the infringer may be able to continue to use their innovation profitably as well.<sup>203</sup> Patentees would also be compensated to some degree for the ongoing use of the insubstantially different variation, so they would not be left empty-handed. Any impact on their *ex ante* incentive to innovate would be reduced: they will receive compensation to help offset their sunk costs, although they will not be able to block the use of the later-developed technology through an injunction.

There may be concerns over whether the courts are institutionally capable of administering such a system. Indeed, such concern has led many scholars to suggest that property rules are more appropriate since they delegate the authority for control over the resource to the owner, who likely has the best information to assess the efficient use of the property. While the appropriateness of this rule can be overstated, it remains the case that courts routinely are involved in assess-

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199. Lemley & Weiser, *supra* note 29, at 786.

200. *Id.* at 793 (noting that transaction costs in IP regimes arise from “the uncertain scope of many rights protected by property rules”).

201. *See* sources cited *supra* note 56.

202. *See* BESSEN & MEURER, *supra* note 56, at 61–62.

203. *Panduit Corp. v. Stahl Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1157–58 (6th Cir. 1978) (“A reasonable royalty is an amount ‘which a person, desiring to manufacture and sell a patented article, as a business proposition, would be willing to pay as a royalty and yet be able to make and sell the patented article, in the market, at a reasonable profit.’” (quoting *Goodyear Tire & Rubber Co. v. Overman Cushion Tire Co.*, 95 F.2d 978, 984 (6th Cir. 1937))).

ing royalty rates and remedies in patent cases. This proposal does not advocate for an industry-wide compulsory license system but instead for a system that would arise in the case-by-case context of patent infringement litigation. Indeed, the Supreme Court has recommended such an approach for patent cases generally.<sup>204</sup>

## VII. CONCLUSION

The doctrine of equivalents remains one of the most controversial areas in patent law. Its role in protecting more than the literal scope of the patent claims creates tension between certainty of claim scope and fairness to the inventor. A patent disclosure informs the public of what the inventor actually possessed. Under current law, however, the doctrine of equivalents paradoxically affords protection for things beyond the scope of the patent's disclosure and beyond what the patentee could have claimed when filing the patent application. If an inventor is granted the exclusive right of a patent in exchange for her disclosure, and the scope of protection is meant to be commensurate with the scope of disclosure, then the Federal Circuit's current doctrine is flawed.

At a minimum, the court has failed to justify this paradox. In property law, constructive possession akin to the doctrine of equivalents is often justified on the basis of fairness. While it might be fair to afford protection under the doctrine of equivalents for technological changes outside the inventor's field that impact her invention, the fairness explanation divorces equivalency from the patent's disclosure. Instead, tying equivalency to the disclosure, thus allowing the disclosure to change over time in the eyes of the PHOSITA, creates an appropriate version of "constructive" possession. Although the patentee was not in actual possession of the invention, she should be viewed as having possession of it because the technology has evolved while the key to her invention has remained intact. Regardless of whether courts adopt this Article's proposal, they should deny injunctive relief in cases where infringement is by equivalency in order to maintain proper incentives to both original innovators and later improvers.

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204. *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 393–94 (2006) (rejecting bright-line rule in favor of permanent injunctions in patent cases). A more modest version of this proposal would be to make infringement under the doctrine of equivalents merely part of the four-factor equitable inquiry detailed in *eBay*. *Id.* at 391. Seemingly, the type of infringement, whether literal or by equivalents, could be addressed in the irreparable harm factor or the balance of hardships factor.