FORESEEABILITY AS A BAR TO THE DOCTRINE OF EQUIVALENTS*

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I. INTRODUCTION

The common-law doctrine of equivalents extends a patent's protection to cover certain similar devices that do not literally infringe on the patent's claims. [1] It is an equitable doctrine meant to protect patentees against devices whose elements perform substantially the same functions, in substantially the same ways, with substantially the same results as the patentee's claimed elements (the “function-way-result” test). [2] Absent this doctrine, competitors could easily subvert the monopoly protection granted by a patent simply by substituting an unclaimed equivalent for a claimed element, thereby skirting liability for literal infringement. Such a loophole would severely threaten the patent system by “convert[ing] the protection of the patent grant into a hollow and useless thing.” [3] Courts have justified the doctrine as necessary to insulate a patentee from the limits inherent in using language to describe inventions. [4]

Broad application of the doctrine of equivalents can, however, create uncertainty as to how substantial an improvement a competitor must make to avoid non-literal infringement. [5] Normally, a patent's claims set out the “metes and bounds” of the invention, just as a deed does for real property. [6] The claims serve a dual purpose: they both define and provide public notice of what the patent protects (and, by implication, what it does not). Both functions stimulate innovation in different ways. The definitional, or protective, function defines what aspects of the invention patent law will protect and, therefore, is the principal incentive for inventors to seek patents. The public-notice function encourages innovation by allowing competitors to make incremental improvements without fear of infringing on the claims of existing inventions. Typically, emphasizing the protective function promotes the investment necessary for breakthrough inventions, whereas emphasizing the public-notice function promotes improvements to existing technologies. [7] Uncertainty as to whether a patent's claims cover an improvement can chill innovation by exposing the would-be improver to potential liability for infringement under a claim of equivalency. The doctrine of equivalents emphasizes the protective function of patents over the public-notice function because its added protection means that competitors cannot rely solely on the literal claim language to avoid creating infringing variants.

The courts created another rule, prosecution history estoppel, to cabin the expansion of protection that the doctrine of equivalents provides. Prosecution history estoppel prevents a patentee from claiming the equivalents that it surrendered during the prosecution of its patent. [8] Estoppel arises in such situations because a patentee disclaimed an equivalent to obtain its patent; it would be improper to permit the patentee to re-establish rights to the same equivalent through the doctrine of equivalents. Prosecution history estoppel also helps reinforce the public-notice function by permitting competitors to rely on the public patent prosecution record to help determine what the patentee has disclaimed. [9]

Both the U.S. Court of Appeals for the Federal Circuit and the U.S. Supreme Court have grappled with articulating the factual situations in which a patent's specification and prosecution history precludes the added protection the doctrine of equivalents affords. The judges of the Federal Circuit hold a broad range of opinions on this issue, and the Supreme Court has had to issue repeated guidance to them.

Several opinions in these cases suggest that a patentee should not be able to invoke the doctrine of equivalents to obtain protection from equivalents that one skilled in the art would have reasonably foreseen before the patent issued. Federal Circuit Judge Rader, in particular, is a strong advocate of such a “foreseeability bar.” [10] The United States and the Institute of Electrical and Electronics Engineers (IEEE) also advanced the idea in their amici briefs to the Supreme Court in *Festo Corp. v. Shoketsu Kinzoku Kogyu Kabushiki Co.*, the Court's latest case involving the issue. [11] The Court's opinion in that case also appears to limit the doctrine's reach in cases involving amended claims to cover only those complained-of equivalents that were not foreseeable when the patentee amended its claims.
This paper examines a series of cases related to the applicability of foreseeability to the doctrine of equivalents. It then attempts to synthesize the current state of the law in the area, and analyzes arguments for and against adopting a foreseeability rule.

II. BACKGROUND

In the seminal 1950 case of Graver Tank & Manufacturing Co. v. Linde Air Products Co., the U.S. Supreme Court reaffirmed the role of the doctrine of equivalents in protecting patents against insubstantial variations. The case involved the composition of flux, a material used to facilitate welding. The patent claimed flux composed of alkaline earth metal silicates such as magnesium. The flux accused of infringing was composed of manganese silicate. Although manganese is not an alkaline earth metal, the Court found infringement under the doctrine of equivalents. Disclosures that manganese silicate was a viable flux ingredient, contained both in the patent's written description and in prior art references, appeared to influence the Court's decision. Hence, the case appeared to suggest that evidence of foreseeability of a particular substitute helped establish protection for that unclaimed substitute under the doctrine of equivalents.

The Supreme Court in 1997 expressed concern that the doctrine of equivalents threatened the public-notice function of claims in Warner-Jenkinson Co. v. Hilton Davis Chemical Co.. The Court nevertheless held that the doctrine of equivalents remained available to patentees who amend their claims during prosecution. In so holding, it rejected arguments that the 1952 revision of the Patent Act eliminated the doctrine of equivalents. The case involved a claim that specified a range of approximate pH levels for an ultrafiltration process used to purify dyes. The patentee had added the range to the claim during prosecution to avoid prior art at the range's upper end; the record did not indicate why the amendment restricted the pH at the range's lower end. Warner-Jenkinson used a process with a pH just below the lower limit. The U.S. Court of Appeals for the Federal Circuit had affirmed the district court jury's finding of infringement under the doctrine of equivalents. The Court reversed the en banc Federal Circuit. It reaffirmed the presumption that prosecution history estoppel barred a claim of equivalence when an amendment narrowed claims.

On the heels of this decision, the Federal Circuit in Sage Products, Inc. v. Devon Industries, Inc. applied the Supreme Court's all-elements test and began to articulate the role that foreseeability might play in limiting the doctrine of equivalents. Circuit Judge Rader (joined by Circuit Judges Mayer and Schall) wrote the opinion for the case, which involved containers for the safe disposal of medical waste including hypodermic needles (for which both parties held patents). Sage argued that Devon's container satisfied the function-way-result test for non-literal infringement. The court, however, noted that Sage's claims included limitations specifying an elongated slot on "top of the container" and inclusion of a constriction extending "over said slot." Noting that the accused device lacked equivalents to those structural elements, the court refused to apply the doctrine of equivalents because, following Warner-Jenkinson, the doctrine did not allow a patentee to remove entire limitations from claims. The opinion asserted that broad application of the doctrine conflicted with the "primacy of the claims in defining the scope of a patentee's exclusive rights," and it also explained that a patentee who claims an invention narrowly may be unable to claim equivalence even if the patentee could have expressly claimed the invention more broadly. Permitting this, the court reasoned, would reduce the claims to "functional abstracts" on which the public could not rely as meaningfully limiting the scope of the invention.

The court reasoned there was no inequity in its refusal to apply the doctrine here because "[a] skilled patent drafter would foresee the limiting potential of the 'over said slot' limitation." Moreover, there was no "subtlety of language or complexity of the technology, nor any subsequent change in the state of the art, such as later-developed technology" that would have hidden the significance of the limitation from the drafter. The court reasoned 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 costs of its failure to seek protection for this foreseeable
alteration of its claimed structure.” [28] It then acknowledged this rule would demand forethought from patent drafters, which may lead to higher prosecution costs, but asserted that allowing patentees to invoke the doctrine of equivalents to recapture foreseeable equivalents would result in the “virtual foreclosure of competitive activity within the penumbra of each issued patent claim” [29] and would create a “zone of uncertainty, into which competitors tread only at their peril.” [30] The court believed it better to impose higher patent prosecution costs on an individual business than to impose higher costs on the public at large, the likely result from the chilling of competition and resulting innovations. A business, it reasoned, can make an informed decision whether carefully patenting a particular invention is worth the investment. [31]

In 2000, the en banc Federal Circuit further constrained the doctrine of equivalents in a per curiam opinion in Festo Corp. v. Shoketsu Kinzoku Kabushiki, Co. [32] The court held that narrowing a claim to comply with the Patent Act gave rise to prosecution history estoppel even when the amendment was not made to avoid prior art. [33] The court further held that prosecution history estoppel was a complete bar, preventing a patentee from claiming equivalence for any amended element. [34] The majority reasoned that its prior flexible bar, whereby the court considered the reasons for an amendment and what subject matter it surrendered, was “unworkable.” [35] It asserted that the new complete bar promoted certainty because it “reduce[d] the conflict and tension between the patent protection afforded by the doctrine of equivalents and the public's ability to ascertain the scope of a patent.” [36] The majority opinion further touted the certainty the new rule would provide by making it clear to all that a patentee disclaimed any and all subject matter encompassed by the original claims but surrendered by amendment. The majority found this approach superior to the flexible approach because the latter approach left open to litigation the question of precisely what range of equivalents prosecution history estoppel barred. [37]

Circuit Judge Rader (joined by Circuit Judges Michel and Linn) refused to limit the doctrine of equivalents by adopting the complete bar and focused once again on the concept of foreseeability. His dissent argued that it was illogical for prosecution history estoppel to bar patentees from obtaining protection against equivalents that used technology developed after the patent issued because such equivalents were so clearly unforeseeable at the time of the amendment. [38]

Most recently, the 2002 per curiam opinion of the en banc Federal Circuit in Johnson & Johnston Associates v. R.E. Service limited the doctrine of equivalents even further. [39] The court held that a patentee could not invoke the doctrine to recapture subject matter that it disclosed in the patent yet failed to claim. [40] The patent at issue was for an assembly that prevented damage to copper foil used in circuit boards. Because the foil was extremely thin, manual handling could damage or contaminate it, causing discontinuities in the resultant circuit boards. The invention joined the copper foil to a stiffer substrate sheet of aluminum, which workers could remove and recycle after processing. The written description stated, “While aluminum is currently the preferred material for the substrate, other materials, such as stainless steel or nickel alloys, may be used. In some instances ... polypropelene [sic] can be used.” [41] The patent's claims specified a “sheet of aluminum” and “the aluminum sheet,” and did not claim the other substrate materials the written description had disclosed. [42] The defendant, RES, made copper foil laminates using steel in place of aluminum as the substrate. Both parties relied on a prior decision of different panels of the court: Johnson & Johnston cited YBM Magnex, Inc. v. International Trade Commission [43] as precedent for its position, and RES cited Maxwell v. J. Baker, Inc. [44] to support its non-infringement argument. [45] Reasoning that it is the claims, and not the written description, that have primacy in defining the invention, the court held that subject matter a patentee discloses without claiming is thereby dedicated to the public and cannot be recaptured under the doctrine of equivalents. [46] In so holding, it reversed the district court's jury finding of infringement, affirmed the holding in Maxwell, and overruled YBM Magnex to the extent it conflicted with the holding. The court asserted that allowing the patentee to recapture subject matter it had not claimed would “conflict with the primacy of the claims in defining the scope of the patentee's exclusive right.” [47] The court was also concerned that wily patentees might claim inventions narrowly to avoid the prosecution scrutiny of the Patent and Trademark Office (“PTO”) and then invoke the doctrine of equivalents to broaden their patents to cover disclosed equivalents that the PTO did not fully examine. [48] The court noted that a patentee who failed to claim disclosed subject matter could remedy the situation after the patent issued. Such a patentee could file a reissue application under 35 U.S.C. § 251 and seek to broaden the scope of the claims to encompass the disclosed but unclaimed subject matter, or could file a continuation application under 35 U.S.C. § 120. [49] The court distinguished the case from Graver Tank, in which the Supreme Court had suggested that the doctrine of equivalents covered substitutes mentioned in the written description, by noting that the patent as issued in Graver Tank actually
had claimed the disclosed equivalent, manganese, though courts had later invalidated the claims comprising it. Hence, there was no implication in *Graver Tank* that the patentee dedicated the disclosed equivalent to the public.

The case generated considerable differences of opinion among the circuit judges as reflected in the four concurrences written by Circuit Judges Clevenger, Rader, Dyk, and Lourie (each joined by at least one other judge) and a solo dissent from Circuit Judge Newman. In his concurrence (joined by Chief Judge Mayer), Judge Rader justified the result on the basis of a “foreseeability bar,” reasoning that the doctrine of equivalents should bar a patentee from recapturing unclaimed “subject matter that the patent drafter reasonably could have foreseen during the application process ....” Under this rule, disclosed but unclaimed equivalents are per se reasonably foreseeable and therefore subject to the bar. Judge Rader asserted that the foreseeability bar reinforced the public-notice function of the claims:

[T]he 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. Foreseeability thus places a premium on notice while reserving a limited role for the protective function of the doctrine of equivalents.

Judge Rader cited several earlier Federal Circuit cases dating as far back as 1984 that had suggested a role for foreseeability in determining non-literal infringement. He asserted that the doctrine of equivalents was implicitly limited to protecting patentees from only those equivalents against which they could not have protected themselves “with reasonable care and foresight.”

Judge Newman's dissent, in attacking the per curiam holding barring equivalency for any disclosed but unclaimed subject matter, raised several concerns also applicable to Judge Rader's foreseeability bar. She asserted that the per curiam rule would discourage patentees from thoroughly disclosing their inventions for fear that they might disclose but fail to claim an equivalent; this would reduce the value of patents as a source of public knowledge. She also argued that making it easier for copyists to avoid infringement can discourage investment in future innovations, threatening economic growth. She feared the adverse and unfair impact the rule would have on existing patent holders that may have disclosed and failed to claim equivalents not knowing that by so doing, they were giving up all rights to those equivalents. Lastly, Judge Newman took her colleagues to task for failing to follow binding Supreme Court precedent, arguing that they had insufficiently distinguished this case from *Graver Tank*.

Just two months after the Federal Circuit's decision in *Johnson & Johnston*, the Supreme Court decided the appeal of the Federal Circuit's decision in *Festo*. Several groups filed amici briefs; some supported the old, flexible bar, others supported the Federal Circuit's new complete bar, and still others urged the adoption of a different rule. Interestingly, large patent holders and inventors were on both sides of the issue. The 3M Brief, arguing for a return to the flexible bar, disagreed, asserting that, for most patents, the complete bar virtually eliminated the protection afforded by the doctrine of equivalents, a result patentees could not have anticipated when they amended their claims. The IEEE filed its brief over concern that “sufficient incentive be given to inventors to innovate without unduly chilling the creation and development of non-infringing technology and improvements.” The IEEE argued that both the flexible and complete bars were unworkable and that a foreseeability bar would optimally balance the protective and public-notice functions of patents, thereby promoting innovation. It also asserted that drafters and inventors could understand such a rule, that courts could readily apply it, and that it was consistent with earlier decisions of both the Federal Circuit and the Supreme Court.

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The United States Brief specified two situations in which courts should permit a patent holder to claim equivalency on an amended claim, both of which turn on the concept of foreseeability. The first situation was if “the assertedly equivalent element is itself an innovation that was not known to persons of ordinary skill in the art” and
was “therefore not surrendered through the claim amendments.” [73] The second situation was if “owing to the nature of the subject matter at issue, it was not possible for one of ordinary skill in the art” to “reasonably have drafted a patent claim that literally encompassed the allegedly equivalent elements.” [74]

Although acknowledging the “equitable appeal” of the foreseeability concept, [75] the Applera Brief attacked the approach as likely to promote expensive litigation over what was and was not foreseeable to whom. It asserted parties would frequently litigate this issue even though “in only a fraction of the cases will language that would capture an accused device have been truly unforeseeable ....” [76] The Applera Brief identified several techniques drafters can use to help ensure that claims literally encompass after-developed equivalents:

1. generic language, such as “light source” instead of “lamp” if light is what is required for the invention,
2. terms of degree such as “mostly”,
3. broadening modifiers such as “substantially” or “essentially”,
4. functional limitations such as those expressly authorized under 35 U.S.C. Section 112(6),
5. negative limitations such as “but not ...”, and
6. language of result such as “wherein the ....” [77]

The Supreme Court vacated the Federal Circuit's decision, ruling that the Federal Circuit's complete bar rule had gone too far in limiting claims of equivalency. [78] The Court emphasized, however, that the presumption of prosecution history estoppel remained appropriate. It also seemingly embraced the foreseeability concept. [79] The Court explained that prosecution history can rebut presumptions inherent in the doctrine of equivalents, such as that language limitations kept the patentee from drafting the claims to encompass the equivalents. [80] The Court held that a patentee can rebut the presumption that prosecution history estoppel applies by showing “that at the time of amendment one skilled in the art could not reasonably be expected to have drafted a claim that would have literally encompassed the alleged equivalent.” [81] The Court offered examples of cases where one could not reasonably consider an amendment to have surrendered an equivalent, thereby leaving the doctrine of equivalents available to recapture it. These included cases involving those equivalents not foreseeable at the time of amendment, those only tangentially related to the reason for the amendment, and those that one could not otherwise have reasonably expected the patentee to describe. [82]

The Court appeared concerned that the Federal Circuit's complete bar would disregard eight Supreme Court decisions and over fifty Federal Circuit cases, as Judge Michel's partial dissent below (joined by Judge Rader) had pointed out. [83] The Court criticized the Federal Circuit for ignoring its Warner-Jenkinson guidance that courts consider the “settled expectations of the inventing community” before adopting changes that disrupt those expectations, and that any fundamental change should come from Congress and not the courts. [84] The Court explained that patent prosecution occurs in light of case law, that prior inventors were entitled to rely on then-existing case law, and that they might have pursued their claims differently (such as through appeal rather than amendment) had the Federal Circuit's complete bar been the rule when they prosecuted their patents. [85]

The Court also appeared to have been influenced by Judge Rader's partial dissent below (joined by Judge Michel) and the amici briefs submitted by the IEEE [86] and the United States, [87] each of which argued that the doctrine of equivalents should continue to protect a patentee from those equivalents that were unforeseeable at the time of amendment. [88] The Court seems to have adopted this logic in Festo II, at least with respect to amended claims; “There is no reason why a narrowing amendment should be deemed to relinquish equivalents unforeseeable at the time of the amendment and beyond a fair interpretation of what was surrendered.” [89]

III. ANALYSIS
The Supreme Court's *Festo II* opinion indicates that current law incorporates the idea of foreseeability in balancing the protection-enhancing objective of the doctrine of equivalents against the notice-enhancing and equitable objectives of prosecution history estoppel. [90] The opinion, however, leaves open several substantial questions, the answers to which will affect how courts apply foreseeability in balancing these competing objectives:

- If unforeseeability rescues the doctrine of equivalents from prosecution history estoppel, does it follow that foreseeability is fatal?

- Does foreseeability apply to whether the limiting effect of the claim language was foreseeable, to whether the accused equivalent was foreseeable, or to both of these situations?

- To whom must the limiting effect of the claim language or the accused equivalent have been foreseeable?

- Does the foreseeability bar apply only to amended claims, or does it also apply to claims allowed by the PTO as originally drafted?

This Part explores these questions and examines the merits and demerits of using foreseeability as a bar to the doctrine of equivalents.

**A. Unforeseeability versus Foreseeability**

Although the Court in *Festo II* indicated that unforeseeability barred prosecution history estoppel, it did not as clearly indicate that foreseeability barred the doctrine of equivalents. [91] The Applera Brief implied this latter rule was a necessary corollary to the position taken by the IEEE and the United States in their amici briefs. [92] If the foreseeability rule does not follow from the unforeseeability rule simply by operation of logic, a patent holder could claim equivalency against an asserted equivalent that was reasonably foreseeable to the patentee at the time of amendment. The Court indicated that it might allow this outcome where “the rationale underlying the amendment ... bear[s] no more that a tangential relation to the equivalent,” but it did not elaborate on when this exception might apply. [93] Moreover, it stated that a patentee is “expected to draft claims encompassing readily known equivalents,” suggesting foreseeability. [94]

Prosecution history estoppel was not an issue in the Federal Circuit's *Sage* and *Johnson & Johnston* cases because they did not involve amended claims. Judge Rader's opinions in those cases focused firmly on foreseeability as a bar to the doctrine of equivalents. [95] Thus, the Court's *Festo II* decision and Federal Circuit opinions seem to suggest that an asserted equivalent's foreseeability is a bar to claiming equivalency.

**B. What Must be Foreseeable? And to Whom?**

The opinions and briefs discussed above do not make it clear whether the foreseeability bar applies to the foreseeability of (a) the alleged equivalent or (b) the limiting effect of the claim language. Judge Rader's concurrence in *Johnson & Johnston* focused on the foreseeability of an equivalent, whereas his *Sage* opinion focused on the limiting effect of the claim language. [96] The United States brief for *Festo II* suggested the foreseeability bar should apply to both scenarios. [97] Although appearing to be two different issues, the Supreme Court's *Festo II* opinion conflates them somewhat. [98] Consider its holding that a patent holder can avoid prosecution history estoppel by showing “that at the time of the amendment one skilled in the art could not reasonably be expected to have drafted a claim that would have literally encompassed the alleged equivalent.” [99] This wording suggests that “one skilled in the art” (a phrase usually applied to inventors) has “drafted a claim” (a task usually done by patent counsel or patent agent rather than inventors). Assuming that the Court meant the first half of the test to apply to the inventor and the second half to apply to the inventor's patent counsel, the Court's test suggests the inventor's foresight is at issue. While the Court instead could have meant the entire test to apply to patent counsel, use of the “skilled in the art” phrase argues against this reading because patent law so closely associates that phrase with inventors. Thus, a reasonable reading of the Court's holding is that the inventor and its patent counsel must work together to ensure that the claims, as drafted, encompass all equivalents reasonably foreseeable to the inventor (or one of ordinary skill in the relevant art) before the patent issues. [100] If they fail to
do this, they will lose the right to invoke the doctrine of equivalents against asserted equivalents that were foreseeable. This reading also focuses both the inventor and his counsel on the public-notice and protection functions of the claims.

During litigation, a fact-finder would determine the foreseeability of an alleged equivalent by considering what was reasonably foreseeable either to the patentee or to one of ordinary skill in the art of the invention. [101] A court would assess the foreseeability of the limiting effect of the claim language by considering what limiting effect was reasonably foreseeable either to the drafter or to one of ordinary skill in the art of claims drafting in the subject matter of the invention. [102]

Thus, the cases suggest that courts should apply the foreseeability bar both to the foreseeability of asserted equivalents and to the foreseeability of the limiting effect of claim language.

C. Foreseeability and Original Claims

The foreseeability rule articulated by the Court in *Festo II* applied to claims amended during prosecution. [103] Because that was the factual situation in the case, the amici briefs also focused on foreseeability in the context of amended claims. Unresolved is the question of whether foreseeability should also apply to claims allowed as originally drafted, however infrequent an occurrence this may be. [104]

As noted above, one view of the foreseeability bar to the doctrine of equivalents is simply that it is a logical corollary to the unforeseeability bar to prosecution history estoppel. [105] Taking this view, one could argue that the foreseeability bar cannot apply in a situation where prosecution history estoppel cannot be asserted. Such is the case with original, unamended claims. When a patentee amends claims, it is often purposefully narrowing them to achieve patentability, and the presumption is that any such narrowing also surrenders equivalents due to prosecution history estoppel. [106] Thus, the act of narrowing claims puts the patentee on notice that it may be waiving its right to equivalents. It also creates a public record from which competitors can draw inferences about substitutes the patentee has disclaimed. Where original claims are involved, however, the patentee is not actively surrendering subject matter and may not realize that it is waiving its rights to the application of the doctrine of equivalents if its counsel does not draft the claims to literally encompass reasonably foreseeable equivalents. Thus, there does appear to be some basis to assert that the foreseeability bar should not apply to original claims.

Consider, however, an invention having two parts fastened together. In Scenario One, the inventor claims the invention narrowly: “Part A attached to Part B with glue.” In Scenario Two, the inventor claims the invention more broadly: “Part A attached to Part B by a fastener.” In Scenario Two, the inventor amends the claim to avoid prior art whereby Part A is attached to Part B by screws, and ends up with exactly the same claim as in Scenario One. The written description and claim are identical upon the patent's issue in both Scenarios.

A competitor begins selling a product in which Part A is attached to Part B using Bondion, a technology developed after the patent issued. In this situation, the *Festo II* rule ensures that the inventor can claim equivalency in both Scenarios, because the use of Bondion was not reasonably foreseeable before the patent issued.

Another competitor begins selling a product in which Part A is attached to Part B by stitching. Under the Supreme Court's *Festo II* rule, the inventor in Scenario Two is barred by prosecution history estoppel from claiming equivalency unless he can show that “one skilled in the art could not reasonably be expected to have drafted a claim that would have literally encompassed the alleged equivalent,” an unlikely hurdle to clear. [107] Otherwise, competitors are free to infer that the inventor has surrendered all subject matter literally encompassed by the original claim but not by the amended claim. [108] This would presumably include stitching.

If the foreseeability rule applied also to original claims, and if stitching was a reasonably foreseeable equivalent to glue before the patent issued, the inventor in Scenario One could not claim equivalency either. If the foreseeability rule did not apply, the inventor in Scenario One could claim equivalency. [109] This latter approach favors inventors that get the scope of their claims correct from the start by awarding them full protection under the doctrine of equivalents. It also penalizes inventors seeking broad protection for their inventions by limiting, or even
eliminating, protection under the doctrine of equivalents should they have to narrow their claims during prosecution. Awarding the added protection of the doctrine of equivalents only to the narrower claimer is an odd result, as it would doubtless be a more valuable and justifiable award for patentees seeking broad protection for their breakthrough inventions. [110]

Although the Supreme Court seemed to address and embrace only the unforeseeability bar to prosecution history estoppel in *Festo II*, it did say that a patentee is “expected to draft claims encompassing readily known equivalents.” [111] This suggests the Court might disallow equivalency claims against foreseeable equivalents not literally encompassed by the original claim language. Judge Linn's partial dissent to the *Festo I* opinion (joined by Judge Rader) argued that, absent a compelling reason, a rule limiting the doctrine of equivalents for amended claims should also apply to original claims. [112] Judge Rader's opinions in the Federal Circuit's *Sage and Johnson & Johnston* cases, neither of which involved amended claims, also suggest that courts should apply the foreseeability rule to original claims. [113] Thus, the cases appear to support applying the bar both to claims that issue as originally drafted and to claims amended during prosecution.

### D. The Merits and Demerits of a Foreseeability Bar to the Doctrine of Equivalents

Apparent advocates of a foreseeability rule, such as the IEEE, Federal Circuit judges Rader, Linn, Schall, and Michel, and the United States, think that the rule provides an equitable balance between patent law's protection and public-notice functions. The IEEE, for instance, argued that the Federal Circuit's pre-*Festo I* flexible bar tilted the balance too far to the protection side, providing would-be competitors with insufficient notice of what improvements might infringe, thereby hampering innovation and competition. [114] It also argued that the complete bar advocated by the Federal Circuit's majority in *Festo I* swung the balance too far the other way, enabling a copyist to become a legitimate competitor simply by examining a patent's prosecution history and interchanging insubstantial substitutes for elements narrowed during prosecution. [115]

The foreseeability bar enhances the public-notice function by making it clear to all that the patentee disclaims rights to any unclaimed equivalents that were reasonably foreseeable to the patentee or to one skilled in the art before the patent issued. It also enhances the protection function by preserving protection for non-literal infringement against devices employing equivalent elements using after-developed technology. The foreseeability bar is also fair to the patentee because the patentee, as “master of his claims,” [116] has full control over the claim language, and the rule demands no more of him than to apply ordinary skill in considering equivalents and in ensuring his patent counsel drafts claims that literally encompass them. The patentee can obtain meaningful protection for literal infringement against unforeseeable equivalents by employing a drafter who uses techniques like those identified in the Applera Brief for *Festo II*. [117] If he discovers that his patent failed to encompass a foreseeable equivalent, he can take advantage of rules allowing him to amend its claims or file a continuation even after the patent issued. [118] Advocates of the foreseeability bar also argue that courts can administer it more easily than the flexible bar, in part because foreseeability is a legal concept courts are already familiar with from other areas of the law, such as unintentional torts.

Apparent opponents of the foreseeability bar [119] argue that it would substantially raise the costs of prosecuting and defending patents. Patent counsel will have to be very precise when drafting claims and amendments to ensure the patentee does not lose the protection of the doctrine of equivalents. This additional care can translate into added costs for inventors, stifling innovation for those with scarce resources. [120] The Applera Brief for *Festo II* asserted that parties will contest foreseeability in almost every case involving non-literal infringement. [121] Moreover, what may or may not have been foreseeable before a patent issued could be difficult to determine in an infringement suit taking place years later. [122]

Proponents are likely to counter that courts did not create the doctrine of equivalents to rescue patentees from substandard drafting, despite having done so in some cases. Nor do courts appear hamstrung by determining the related issue of what may or may not have been obvious to one skilled in the art before a patent issued in suits taking place years later. Because the test looks to what was reasonable when the patent issued, a court should apply a relatively low standard to patents issued before the rule's articulation. A court would likely apply the rule with increasing strictness to new patents, as drafters hone their skills to adapt to the new rule and as the standard of reasonableness for a drafter changes. This could help mitigate any harshness associated with applying the rule in
infringement cases involving older patents.

Another argument against the rule is that it fundamentally changes the balance between a patent’s public-notice and protection functions, something the Supreme Court said only Congress, and not the courts, could do. [123] The Court was concerned that such changes might destroy “the legitimate expectations of inventors in their property.” [124] But adoption of this rule probably does not change the balance significantly enough to raise this concern, especially as it balances the interests appropriately rather than favoring one over the other as the complete bar did. Concerns about settled expectations may be misplaced as well, given that major patent holders and inventors such as IBM and Kodak favored the complete bar, a rule that would have eliminated protection against an even broader range of equivalents than does the foreseeability rule. [125]

Opponents may also argue that the foreseeability bar could discourage patentees from fully disclosing their inventions because the written description may later be used as evidence that a challenged equivalent was reasonably foreseeable. [126] The Patent Act, however, sets out the requirements for what the written description must disclose; if the disclosure is indeed insufficient, the PTO will not issue a patent. [127]

Lastly, the bright-line certainty of the complete bar has some appeal over the more subjective foreseeability bar. Both the flexible bar and the foreseeability bar introduce uncertainties that can threaten the public-notice function, making it risky to innovate at the edges of existing patents. This uncertainty might also promote poorly drafted patents because the doctrine of equivalents will rescue some number of those patents at trial, even though that was never its purpose. [128] While these points have merit, the foreseeability bar demands precision in claims drafting, which should lead to higher quality drafting that provides clearer notice of the range of equivalents a patent likely encompasses than has the flexible bar. The complete bar, as the Court indicated in Festo II, simply does not provide sufficient protection against non-literal infringement to patents amended during prosecution.

IV. CONCLUSION

The Supreme Court’s opinion in Festo II and the Federal Circuit’s opinions in Sage and Johnson & Johnston, when combined, strongly suggest that courts will limit the doctrine of equivalents by applying a foreseeability bar. A court applying this rule will refuse to allow a patent holder to claim equivalency against an asserted equivalent in two situations. It will apply the bar if the asserted equivalent was reasonably foreseeable, either to the patentee or to one of ordinary skill in the relevant art, before the patent issued. It will also apply the bar if the limiting effect of the claim language, which resulted in its failure to literally encompass the asserted equivalent, was reasonably foreseeable either to the patent drafter, or to one of ordinary skill in drafting claims in the relevant art, before the patent issued. This rule seems to appropriately balance the public-notice and protection functions at the heart of patent law, providing a reasonable level of protection against copyists for breakthrough inventions while also encouraging valuable improvements at the edges of existing patents.

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[1]. “The [patent] specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.” 35 U.S.C. § 102 ¶ 2 (2000).


[3]. See id. at 607.

[5]. See Warner-Jenkinson Co., Inc. v. Hilton Davis Chem. Co., 520 U.S. 17, 29 (1997) (“There can be no denying that the doctrine of equivalents, when applied broadly conflicts with the definitional and public-notice functions of the statutory claiming requirement.”).


[9]. Brief of the Institute of Electrical and Electronics Engineers-United States of America as Amicus Curiae in Support of Neither Party at *10-11, Festo II (No. 00-1543), at 2001 WL 1025309 [hereinafter IEEE Brief].

[10]. See infra notes 23-31, 38, 51-55 and accompanying text.


[12]. The applicability of the doctrine of equivalents to means-plus-function claims under 35 U.S.C. § 112 ¶ 6 is beyond the scope of this paper.


[14]. See id. at 612.

[15]. Id. at 612, 613.


[17]. Id. at 25-28.

[18]. Id. at 32.

[19]. Id. at 23.

[20]. Id. at 30-31.

[21]. Warner-Jenkinson, 520 U.S. at 33, 41.

[22]. See id. at 29.

[23]. 126 F.3d 1420 (Fed. Cir. 1997).

[24]. Id. at 1424.

[25]. Id.

[26]. See id. at 1425.
[27]. Id.

[28]. Sage, 126 F.3d at 1425.

[29]. See id.

[30]. Id.

[31]. See id.

[32]. 234 F.3d 558 (Fed. Cir. 2000) (en banc).

[33]. Id. at 587-88, 591.

[34]. Id. at 588, 591.

[35]. Id. at 575.

[36]. See id. at 575, 578.

[37]. See Festo I, 234 F.3d at 575.

[38]. See id. at 619-20 (Rader, J., dissenting in part).


[40]. Id. at 1055.

[41]. Id. at 1050.

[42]. Id.


[44]. 86 F.3d 1098 (Fed. Cir. 1996) (opinion by Circuit Judge Laurie, joined by Senior Circuit Judge Skelton and Circuit Judge Schall).

[45]. See Johnson & Johnston, 285 F.3d at 1051.

[46]. This matches the holding Justice Douglas's dissent argued for in Graver Tank. See 339 U.S. at 618 (Douglas, J., dissenting).

[47]. Johnson & Johnston, 285 F.3d at 1054 (quoting Sage, 126 F.3d at 1424).

[48]. Id. at 1054-55. But see id. at 1068 n.2 (Newman, J., dissenting) (“The idea that the patentee can choose to avoid examination by refraining from claiming disclosed equivalent subject matter is contrary to the rules of patent examination.”).

[49]. Id. at 1055.
[50]. *Id.* at 1055-72.

[51]. *Id.* at 1056 (Rader, J., concurring).

[52]. See Johnson & Johnston, 285 F.3d at 1059 (Rader, J., concurring).

[53]. *Id.* at 1057 (Rader, J., concurring).

[54]. The Federal Circuit was created by Congress in 1982, suggesting that the court has been aware of this issue since early on in its creation.


[56]. *See id.* at 1059 (Rader, J., concurring).

[57]. *See id.* at 1064 (Newman, J., dissenting).

[58]. *See id.* at 1071 (Newman, J., dissenting).


[60]. *See id.* at 1072 (Newman, J., dissenting).

[61]. *See id.* at 1064-67 (Newman, J., dissenting).


[63]. *See, e.g.*, 3M Brief.


[65]. *See, e.g.*, IEEE Brief; Brief for the United States as Amicus Curiae Supporting Vacatur and Remand, *Festo II* (No. 00-1543), at 2001 WL 1025650 [hereinafter United States Brief].

[66]. *See Applera Brief at *20.*

[67]. IBM Brief at *17. See also Festo I, 234 F.3d at 596 (Laurie, J., concurring) (“Surely, when prosecuting a patent, patent practitioners have no settled expectations of being able to assert the doctrine of equivalents.”).

[68]. *See 3M Brief at *1-2, *4.*

[69]. The IEEE “promotes the career and technology policy interests of ... nearly two hundred and thirty thousand electrical, electronic and computer engineers” with a vision “to advance global prosperity by fostering technological innovation ...” IEEE Brief at *1. Its members “serve on the ‘front line’ of the United States patent system” and comprise “pioneer inventors, inventors of novel improvements and designers of innovative refinements of the state of the art.” *Id.*
[70]. See id. at *1-2.

[71]. Id. at *4.

[72]. See id.

[73]. United States Brief at *25, *29.

[74]. Id. at *26, *29.

[75]. Appla Brief at *25.

[76]. Id. at *20-21, *23-25.

[77]. Id. at *21-22.


[79]. See id. at 740-41.

[80]. See id. at 734-35.

[81]. Id. at 741.

[82]. Id. at 740-41.

[83]. See Festo II, 535 U.S. at 730.

[84]. Id. at 739.

[85]. See id.

[86]. The IEEE was itself influenced by Judge Rader's Sage opinion. See IEEE Brief at *21.

[87]. See United States Brief at *25-26.


[89]. Festo II, 535 U.S. at 738.

[90]. See id. at 740-41.

[91]. See id.

[92]. See Appla Brief at *20-21.


[94]. Id. at 740.
[95]. See Sage, 126 F.3d at 1425; Johnson & Johnston, 285 F.3d at 1056 (Rader, concurring).

[96]. Compare supra notes 51-56 and accompanying text, with supra notes 23-31 and accompanying text.


[99]. Id. at 741.

[100]. See id.

[101]. This would likely be a question of fact, analogous to the determination of obviousness. But see IEEE Brief at *19 (suggesting this might be a question of law); Johnson & Johnston, 285 F.3d at 1063 (Laurie, J., concurring) (arguing this would be a mixed question of law and fact).

[102]. This would likely be a question of law, analogous to claims construction. See Markman v. Westview Instruments, Inc., 517 U.S. 370, 388-91 (1996) (holding that claims construction is a task for judges rather than juries because of the special skills required and the need for consistency).

[103]. See Festo II, 535 U.S. at 741.

[104]. “Informal inquiry reports that for simple inventions, at most 10-15% of patents are granted without claim amendment, although very rarely without argument. For complex inventions the percentage of unamended applications is vanishingly small.” Festo I, 234 F.3d at 638 n.3 (Newman, J., dissenting). See also supra note 67 and accompanying text.

[105]. See Applera Brief at *20-21.


[107]. Indeed, a more skilled drafter could have avoided the prior art by amending the claim to “Part A attached to Part B by a fastener other than screws,” and the stitching would have literally infringed. See supra note 76 and accompanying text. It is important to note that the Festo II opinion also suggests the inventor might not be barred if it can show that “the rationale underlying the amendment ... bear[s] no more than a tangential relation” to stitching. See Festo II, 535 U.S. at 740-41.


[109]. Although, in applying the doctrine, the stitching might not satisfy the function-way-result test for equivalency.


[112]. See Festo I, 234 F.3d at 626 (Linn, J., dissenting in part).

[113]. See Sage, 126 F.3d at 1425, Johnson & Johnston, 285 F.3d at 1056 (Rader, concurring).

[115]. See, e.g., Festo I, 234 F.3d at 600-01 (Michel, J., dissenting in part); id. at 627 (Linn, J., dissenting in part).

[116]. Id. at 597 (Laurie, J., concurring).

[117]. See supra text accompanying note 77.

[118]. See 35 U.S.C. §§ 120, 251 (2000). But he'd better move fast-- a patentee has only two years from a patent's issue to increase the scope of its claims. Id. § 251.

[119]. These would likely include Federal Circuit judges Laurie and Newman, based on their opinions in Johnson & Johnston and Festo I, and the amici who joined the Applera Brief. Other supporters of either the complete bar or the flexible bar may or may not oppose the foreseeability bar. Their opposition would likely turn on the extent to which they view it as not sharing the characteristics of their preferred rule.

[120]. Cf. Festo I, 234 F.3d at 624 (Linn, J., dissenting in part) (expressing these same concerns with regard to the complete bar).

[121]. See Applera Brief at *23.

[122]. See, e.g., Johnson & Johnston, 285 F.3d at 1063 (Laurie, J., concurring) (expressing concern that foreseeability would raise additional issues of fact).

[123]. See Festo II, 535 U.S. at 739.

[124]. Id.

[125]. See IBM Brief at *14.


[128]. Cf. Applera Brief at *16-18 (asserting that the complete bar would lead to higher quality patents resulting in less litigation and overall lower costs).