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Martin J. Adelman

George Washington University Law School, madelman@law.gwu.edu

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Chapter 9

FESTO AND THE DOCTRINE OF EQUIVALENTS: IMPLICATIONS FOR PATENT INFRINGEMENT LITIGATION

*Martin J. Adelman**

In a major *en banc* decision, *Festo Corporation v. Shoketsu Kinzokukogyo Kabushiki Co., Ltd.*,¹ the Federal Circuit failed to expressly limit the application of the doctrine of equivalents to those accused products or processes that were not reasonably foreseeable at the time of the patent, but did limit the doctrine of equivalents by expanding the reach of the doctrine of prosecution history estoppel. The court did this by extending prosecution history estoppel to all amendments made for reasons of patentability as well as by holding that once it finds that an estoppel attaches to a limitation, there is no range of equivalents available for that element. In order to fully understand the implications of *Festo* for both prosecutors and litigators, it is necessary to analyze the language the court used to explain its decision. I now turn to this task.

The Federal Circuit summed up its conclusions:

In response to En Banc Question 1, we hold that “a substantial reason related to patentability” is not limited to overcoming prior art, but includes other reasons related to the statutory requirements for a patent. Therefore, an amendment that narrows the scope of a claim for any reason related to the statutory requirements for a patent will give rise to prosecution history estoppel with respect to the amended claim element.² In response to En Banc Question 2, we hold that “voluntary” claim amendments are treated the same as other claim amendments; therefore, any voluntary amendment that narrows the scope of a claim for a reason related to the statutory requirements for a patent will give rise to prosecution history estoppel with respect to the amended claim element. In response to En Banc Question 3, we hold that when a claim amendment creates prosecution history estoppel, no range of equivalents is available for the amended claim element. In response to En Banc Question 4, we hold that “unexplained” amendments are not entitled to any range of equivalents. We do not reach En Banc Question 5. . . .³

* Professor of Law; Director of the Intellectual Property Law Program; Director of the Dean Dinwoodey Center for Intellectual Property Studies; George Washington University Law School, Washington, D.C.

¹234 F.3d 558, 56 U.S.P.Q.2D (BNA) 1865 (Fed. Cir. 2000)(*en banc*). The following analysis is adapted from 3 MARTIN J. ADELMAN, PATENT LAW PERSPECTIVES §3.5[1] at n.59.

²“In our prior cases, we have used both the term “element” and the term “limitation” to refer to words in a claim. . . . It is preferable to use the term “limitation” when referring to claim language and the term “element” when referring to the accused device. . . . However, because the *en banc* questions use the term “element,” we use that term in this opinion.”

³56 P.Q.2d at 1868.

Except for Judge Newman, all active judges joined in the court's holdings as to questions 1, 2 and 4. Judges Michel, Rader, Linn and Newman dissented from the majority's "no range of equivalents" holding in response to question 3.

While it might seem appropriate to start the discussion with question 1, it is hard to decide whether the answers to questions 1 or 2 make sense without knowing the consequences of labeling a limitation as one to which an estoppel attaches unless one knows the consequences of such a label. There are essentially two ways to treat such a limitation. One is to say that a court should carefully examine what positions were taken in the PTO relating to the limitation to insure that the patentee is not in court adopting a position inconsistent with one taken with respect to the same element in the PTO.⁴ This approach can be viewed as a flexible approach. The other is simply to assert that once a limitation has been amended, it is fixed by the words themselves.

The Federal Circuit, after asserting that it was free to choose the best rule, explained why it adopted the "no range of equivalents" approach after nearly twenty years experience with the flexible rule:

Our decision to reject the flexible bar approach adopted in *Hughes I* comes after nearly twenty years of experience in performing our role as the sole court of appeals for patent matters. In those years, the notice function of patent claims has become paramount, and the need for certainty as to the scope of patent protection has been emphasized. A problem with the flexible bar approach is that it is virtually impossible to predict before the decision on appeal where the line of surrender is drawn. The patentee would draw the line just at or slightly short of the prior art, leaving a wide range of equivalents untouched by prosecution history estoppel. The accused infringer, however, would draw the line close to the literal terms of the claims, leaving little or no range of equivalents. These considerations, we think, contribute to the difficulty under the flexible bar approach in predicting with any degree of certainty the scope of surrender that will be found when prosecution history estoppel applies.

We believe that the current state of the law regarding the scope of equivalents that is available when prosecution history estoppel applies is "unworkable." In patent law, we think that rules qualify as "workable" when they can be relied upon to produce consistent results and give rise to a body of law that provides guidance to the marketplace on how to conduct its affairs. After our long experience with the flexible bar approach, we conclude that its "workability" is flawed. . . .

We also believe that the flexible bar approach "poses a direct obstacle to the realization of important objectives." *Patterson v. McClean Credit Union*, . . . (setting forth the "traditional justifications for overruling a prior case"). These objectives include giving effect, when prosecution history estoppel arises, to a narrowing amendment's operation as a disclaimer of subject matter, . . ., preserving the notice function of patent claims, . . ., and promoting certainty in patent

⁴The Federal Circuit's usual statement is that depending on the nature and purpose of an amendment, it may have a limiting effect from great to small to zero.

law The realization of these objectives cannot help but be frustrated by the uncertainty inherent in the flexible bar approach.

Allowing some range of equivalents gives the patentee some benefit of the doubt as to what was disclaimed, a benefit that comes at the public's expense. A complete bar therefore best serves the notice and definitional function of patent claims. "The object of the patent law in requiring the patentee [to specifically define his invention] is not only to secure to him all to which he is entitled, but to apprise the public of what is still open to them." *McClain v. Ortmyer*, But "the doctrine of equivalents, when applied broadly, conflicts with the definitional and public-notice functions of the statutory claiming requirement." *Warner-Jenkinson*, If prosecution history estoppel acts as a complete bar to application of the doctrine of equivalents, both the patentee and the public are on notice as to the scope of protection provided by a claim element narrowed for a reason related to patentability. The patentee and the public can look to the prosecution history, a public record, to determine if any prosecution history estoppel arises as to any claim element. If so, that element's scope of protection is clearly defined by its literal terms.

A complete bar also eliminates the public's need to speculate as to the subject matter surrendered by an amendment that narrows a claim for a reason related to patentability. There are several aspects of the prosecution history estoppel inquiry where speculation is not allowed. The Supreme Court has noted that we need not inquire into the correctness of the examiner's rejection that led to a claim amendment. . . . Even if the rejection is improper, the amendment may still give rise to prosecution history estoppel. . . . In addition, we do not speculate as to whether any given amendment was material to the prosecution of the patent because "the patentee makes them all material by the restricted form of his claim." In view of the reluctance to entertain speculative inquiries in other aspects of prosecution history estoppel, a speculative inquiry should not be required to determine the scope of equivalents still available for a claim element narrowed for a reason related to patentability. A complete bar avoids such an inquiry.

Under the flexible bar approach, however, the exact range of equivalents when prosecution history estoppel applies is virtually unascertainable, with *only* the prior art marking the outer limits of the claim's scope. There is no precise metric to determine what subject matter was given up between the original claim and the amended claim. Consider, for example, a claim that originally recited a value "less than twenty" that was amended to recite a value "less than five" in light of a rejection over prior art disclosing a value of fifteen. What subject matter was abandoned under the flexible approach? Is the patentee limited to values that are closer to five than fifteen, or can he reach any value less than fifteen? Can the patentee encompass by equivalents a value of ten, or would that recapture part of the surrendered subject matter? Put simply, it is impossible, even under this basic example, for the public or the patentee to determine the precise range of equiva-

lents available under the flexible bar approach. This creates a “zone of uncertainty which enterprise and experimentation may enter only at the risk of infringement claims . . . [and which] discourages invention only a little less than unequivocal foreclosure of the field.” . . . “The public [would] be deprived of rights supposed to belong to it, without being clearly told what it is that limits these rights.” . . .

A complete bar, unlike a flexible bar, thus lends certainty to the process of determining the scope of protection afforded by a patent. With a complete bar, both the public and the patentee know that once an element of a claim is narrowed by amendment for a reason related to patentability, that element’s scope of coverage will not extend beyond its literal terms. There is no speculation or uncertainty as to the exact range of equivalents that might be available. This certainty aids both the public and the patentee in ascertaining the true scope and value of the patent without having to resort to litigation to obtain a case by case analysis of what subject matter the claims can cover. With a complete bar, neither the public nor the patentee is required to pay the transaction costs of litigation in order to determine the exact scope of subject matter the patentee abandoned when the patentee amended the claim.

Thus, under the complete bar approach, technological advances that would have lain in the unknown, undefined zone around the literal terms of a narrowed claim under the flexible bar approach will not go wasted and undeveloped due to fear of litigation. The public will be free to improve on the patented technology and design around it without being inhibited by the threat of a lawsuit because the changes could possibly fall within the scope of equivalents left after a claim element has been narrowed by amendment for a reason related to patentability. This certainty will stimulate investment in improvements and design-arounds because the risk of infringement will be easier to determine. In general, the difficulty in counseling the public and the patentee on the scope of protection provided by an amended element is greatly reduced under the complete bar approach due to the certainty and predictability such a bar produces.

Finally, we see no overriding benefit to the flexible bar approach. Although a flexible bar affords the patentee more protection under the doctrine of equivalents, we do not believe that the benefit outweighs the costs of uncertainty. The Supreme Court noted in *Warner-Jenkinson* that the doctrine of equivalents has “taken on a life of its own, unbounded by the patent claims.” . . . A complete bar reins in the doctrine of equivalents, making claim scope more discernible and preserving the notice function of claims. The Court indicated that the application of a complete bar allowed prosecution history estoppel to place “reasonable limits on the doctrine of equivalents, and further insulate[] the doctrine from any feared conflict with the Patent Act.” . . . The application of a complete bar to the doctrine of equivalents whenever a claim amendment gives rise to prosecution history estoppel similarly reduces 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.⁵

⁵56 P.Q.2d at 1877-80.

This explanation says nothing more than there is uncertainty as to the scope of the estoppel and that the notice function of claims is impacted by this uncertainty. But the uncertainty comes from the doctrine of equivalents itself. It is true that the doctrine would create less uncertainty if it only applied to some, but not all claim limitations. Nevertheless, since the doctrine itself creates uncertainty, the reasoning of the Federal Circuit should lead to its abolition. Abolition would increase certainty as suggested by the notice function of claim limitations. I have repeatedly suggested elsewhere⁶³ that the doctrine of equivalents should only be used to deal with after-arising technology. If so there would be little role for the doctrine of prosecution history estoppel in any form. However, since the court has not adopted this approach, it must see a broader role for the doctrine. If so, then it would follow that the appropriate rule would be that an applicant could not adopt inconsistent positions in the PTO and in court. It certainly would not make sense to say that any limitation put in for any reason relating to patentability would bar the doctrine because that is the more certain rule. It surely is, but so what so long as there is a sound function for the doctrine of equivalents. Therefore, it appears the court is limiting the doctrine of equivalents through the back door rather than by any straightforward analysis.

Judge Plager's opinion dealt with this second best approach for Judge Plager the better approach would be to start with the proposition that equity would control whether the doctrine could be used to expand a limitation, a sound approach so long as it is limited to cases where the accused device or process was not reasonably foreseeable. In essence this form of equitable limitation would permit the use of the doctrine to cover after-arising technology, but not to fix mistakes made by the patent applicant or his attorney. Judge Plager explained why his approach is superior to the one chosen by the majority:

A better solution would be to declare the doctrine of equivalents—a judge-made rule in the first place—to have its roots firmly in equity, and to acknowledge that when and in what circumstances it applies is a question of equitable law, a question for which judges bear responsibility. . . .

Were this court to openly acknowledge that the doctrine of equivalents can only be legitimated by its equitable roots and should be treated as an equitable doctrine, important consequences would flow. Trial courts, sitting as courts of equity, would be responsible for deciding whether the doctrine of equivalents should be applied, not unlike the practice regarding the doctrine of inequitable conduct. On appeal to this court, we would review a trial court's determination under the deferential standard of abuse of discretion.

The test the trial courts would apply would be crafted to blend both objective and subjective factors. The differences between the claimed invention and the accused product would necessarily remain of relevance; and in addition, traditional equitable considerations would focus on matters such as the conduct of the accused product's sponsors, specifically, the considerations pronounced in the Supreme Court's seminal opinion in *Graver Tank & Manufacturing Co. v. Linde Air Products Co.*,

It is true that "fraud" and "unscrupulous" conduct are not terms of precision, yet they are terms with which judges are familiar. More importantly, they point to the

⁶³ MARTIN J. ADELMAN, PATENT LAW PERSPECTIVES §3.4[1] at ns. 387-90.

underlying reason for the doctrine; as the Court said, the essence of the doctrine is fraud. Notions of fairness and equity are concerns which over the centuries have permitted courts to reach beyond the fixed scope of legal rights in “proper circumstances,” to use the Court’s phrase. What those circumstances are in regard to patent rights this court over time could determine, and in time develop a refined body of law that emphasizes the exceptional nature of relief under the doctrine. In time, there would be a set of known factors that could be applied predictably, thus giving a degree of decisional certainty to the doctrine, all the while retaining flexibility in the process to deal with new situations—the hallmark of equitable adjudication.

By contrast, the notion of “insubstantial differences” between a particular claim and a particular product, viewed as the governing principle, can never be anything other than an ad hoc judgment, dependent on the eye of the beholder in the individual case. Though we talk about considering factors such as the role of copying, interchangeability of elements, and so on, the reality is that, as our cases since *Hilton Davis* demonstrate, the decision on equivalents remains essentially a subjective call, with repetition of verbal formulae but without transferability from case to case of practical guidance. This to me is the antithesis of the rule of law.

Those who are wedded to the existing regimen can no doubt find all sorts of objections to this proposed approach. I cannot say that the approach I advocate is a panacea for all that ails the equivalents practice. I can say that what we have does not work very well, and, as we did in *Markman*, it is time to try something else, something that has substantial jurisprudential legitimacy and holds out some promise for improvement. Until such time as this court is of a mind to seek and design a long-term solution to the equivalents problem, however, I have little choice but to join in even this limited effort to cabin what is otherwise, and I fear remains, a doctrine short on predictable results, and short on the achievement of equity to which it owes its existence.⁷

There are two difficulties with Judge Plager’s approach. The first is that while it would control the use of the doctrine of equivalents, its soundness would turn on what situations would be viewed as requiring equivalents under equity. Surely correcting errors, the major use of the doctrine of equivalents today, should not be permitted. That leaves situations that were not reasonably foreseeable such as after-arising technology. If this is what Judge Plager is recommending, then his approach is surely better than that of the *Festo* majority. However, if things like copying would create equities, then the majority’s approach is the better one.

Judge Lourie in a concurring opinion strongly supported the absolute bar rule. He focused particularly on the experience of the court to support its ruling. He explained:

It has been said that there is no hard evidence showing that the so-called “flexible” bar impairs predictability. While it is true that empirical data may not be available,

⁷56 P.Q.2d at 1891-93.

powerful evidence may be garnered from the experience of this court, which monthly reviews appeals in which infringement is asserted under the doctrine of equivalents even though the accused product is clearly not within the literal scope of the asserted claims. Many of these appeals involve prosecution histories in which amendments for patentability reasons have been made. Yet, equivalence is argued in the hope that one panel might find equivalence where another would not. That surely is persuasive evidence that the current flexible bar is not working. Our court was created with the opportunity and mandate to observe such problems in the law and to act upon a possible solution. . . .

It has been suggested that there are settled expectations in the bar and innovation community regarding the present rule. The only settled expectation currently existing is the expectation that clever attorneys can argue infringement outside the scope of the claims all the way through this court of appeals. Such a settled expectation should become unsettled. Surely, when prosecuting a patent, patent practitioners have no settled expectations of being able to assert the doctrine of equivalents. Any patent attorney who fails to claim all that his inventor has invented, and that is patentable, is ill-advised to settle for a narrower claim than he considers justified on the assumption that he can rely on the doctrine of equivalents for broader coverage. Such reliance is a highly risky prospect given that the patent statute requires precise claims. . . . When a patent applicant is faced with a rejection, or expects a rejection, he (or she) is master of his claims. He can stand his ground and appeal, or amend the claims. If the latter course of action is chosen, such conduct, which is known to the world, should bind the applicant. The fact that the applicant may have to appeal an unjustified rejection, incurring loss of time and expense, does not mean that we should refrain from adding clarity to the meaning of claims by holding patent applicants to their actions in the Patent and Trademark Office ("PTO").

Finally, one of the dissenters fears that today's ruling provides would-be copiers with a free pass to appropriate the essence of an invention and yet escape infringement. That is theoretically true. In the future, a competitor may more closely approach the limits of the claims in a patent in which a narrowing amendment has been made without fear of liability. Occasional injustices may occur. However, I believe that such occasional injustices will be greatly outnumbered by competitors who will be able to introduce innovative products outside the scope of claims without fear of unjustified, protracted, and expensive litigation. In today's world, the specter of unpredictable equivalence claims haunts too many business decisions, while the overwhelming majority of equivalence claims ultimately fail. It is more than justified to lessen this fear and hold patent applicants to the consequences of their public prosecution decisions. The rule we announce today should encourage innovation, lessen uncertainty, and diminish the volume of unnecessary litigation, while providing patentees with protection commensurate with the disclosed and allowed scope of their inventions.

As for the biotechnology example hypothesized by one of the dissenters, I believe the concern is largely theoretical. The first inventors in a field are only entitled to

claim what they can describe and enable, and I am confident that competent patent attorneys can readily craft their claims to cover that subject matter so that estoppel can be avoided. Moreover, subsequent inventors will be better able to find and develop improved products without fear of lawsuits. Predictability will be enhanced.

The fact is that, even under our past rule of flexible bar, no court has rendered a decision holding infringement only under the doctrine of equivalents by an accused gene or protein. To the extent that a competitor has been deterred from developing a new compound for fear that it will be held to be an infringer under an equivalence theory, I believe that our new rule will provide a clear net gain for innovation and the public. They will benefit from the greater certainty that new compounds not within the scope of granted claims can be developed without fear of protracted litigation.⁸

With the exception of the plain injustice with respect to after-arising technology, Judge Lourie has it right. What he doesn't explain is why the absolute bar rule should apply to after-arising technology, technology that could not have been disclaimed in the PTO. Perhaps in the proper case Judge Lourie would be willing to make the logical exception to the rule instead of simply saying that there will be injustices, as if such injustices could not be corrected.

Judge Rader focused on the after-arising problem in his dissent. He explained:

A primary justification for the doctrine of equivalents is to accommodate after-arising technology. Without a doctrine of equivalents, any claim drafted in current technological terms could be easily circumvented after the advent of an advance in technology. A claim using the terms "anode" and "cathode" from tube technology would lack the "collectors" and "emitters" of transistor technology that emerged in 1948. Thus, without a doctrine of equivalents, infringers in 1949 would have unfettered license to appropriate all patented technology using the out-dated terms "cathode" and "anode". Fortunately, the doctrine of equivalents accommodates that unforeseeable dilemma for claim drafters. Indeed, in *Warner-Jenkinson Co., Inc. v. Hilton Davis Chemical Co.*, . . . , the Supreme Court acknowledged the doctrine's role in accommodating after-arising technology.

Unfortunately, by barring all application of the doctrine of equivalents for amended claims, this court does not account at all for the primary role of the doctrine. All patent protection for amended claims is lost when it comes to after-arising technology, while the doctrine of equivalents will continue to accommodate after-arising technology in unamended claims. For a reason far more important than disparate treatment of claims, however, this result defies logic.

Prosecution history estoppel is an estoppel doctrine. Estoppel prevents a litigant from denying an earlier admission upon which another has already relied. . . . In the case of patent law, the admission is the applicant's surrender of claim scope to acquire the patent. Today's rule forfeits all protection of the doctrine of

⁸56 P.Q.2d at 1894-96.

equivalents whenever applicants amend their claims, regardless of whether they in fact surrendered coverage. By definition, applicants could not have surrendered something that did not even exist at the time of the claim amendment, namely after-arising technology.

The court reasons today that it will not inquire about the scope of an estoppel because it cannot with certainty ascertain the scope of the applicant's surrender. Although that premise is questionable for the reasons enunciated by Judges Michel and Linn, one thing is beyond question: That premise does not apply to after-arising technology. Because after-arising technology was not in existence during the patent application process, the applicant could not have known of it, let alone surrendered it. Nonetheless, the court would apply an estoppel where none exists and defeat the doctrine of equivalents.⁹

Judge Rader's focus on after-arising equivalents is appropriate. Whether his point that after-arising equivalents could never be disclaimed in the PTO would be accepted by the Federal Circuit in an appropriate case is uncertain. He plainly believes that the answer is "no."

Judge Michel wrote a long dissent explaining:

The majority's concept of prosecution history estoppel is hardly an "estoppel" at all. The majority's approach gives no consideration to whether a reasonable competitor would rely on the nature of the rejections and of the amendments and statements between the applicant and the examiner as evidence of a surrender of subject matter. According to the majority, once there has been a limiting amendment, no consideration may be given to the breadth of the rejection, the closeness of the prior art, the manner of the applicant's remarks and amendments, or the nature of the technology. All equivalents of that limitation are foreclosed by the mere fact of amendment. The majority's rule might more aptly be called "bar by amendment" rather than "estoppel," which has always been measured by what a reasonable competitor would understand the applicant to have surrendered in order to procure his patent. I believe that looking solely to the fact of amendment, rather than the substance of communications between the applicant and the examiner, is contrary to the principles that the Supreme Court (and our court) has always applied in determining the scope of estoppel.

Under the majority's rule, in contrast to the Supreme Court's application of the all-elements rule and prosecution history estoppel, a patentee retains no range of equivalents for a claim limitation that has been amended for patentability reasons. This approach upsets the Supreme Court's balance between the competing needs of sufficient public notice and meaningful patent protection. At the very minimum, I believe the majority's rule is unfairly harmful, because it deprives patentees of any recourse to the doctrine of equivalents for any added or narrowed limitation, no matter how minor the amendment. More importantly, however, I believe that precluding a patentee's right to seek protection under the doctrine of equivalents for amended limitations will, in many cases, "convert the protection

⁹56 P.Q.2d at 1913-14.

of the patent grant into a hollow and useless thing.” *Graver Tank & Mfg. Co. v. Linde Air Products Co.*,

Would-be copyists, of course, will exploit the majority’s bar. Unwittingly, the majority has severely limited the protection previously available to patentees. Indeed, it may nullify the doctrine of equivalents. Under the majority’s approach, anyone who wants to steal a patentee’s technology need only review the prosecution history to identify patentability-related amendments, and then make a trivial modification to that part of its product corresponding to an amended claim limitation. All the other limitations may be copied precisely. The competitor will then be free to make, use, or sell an insubstantial variant of the patentee’s invention. It appears to me that this complete bar approach upsets the balance that the Supreme Court has struck. Under this approach, most patentees will lose the protection against copying that the Supreme Court unanimously reaffirmed in *Warner-Jenkinson*.¹⁰

Judge Michel is arguing as if, under the law as it existed prior to *Festo*, it was easy for a patentee to invoke the doctrine of equivalents in order to preclude gaming of the patent by an alleged infringer. However, this was surely not the case. No patentee could reliably rely on the doctrine of equivalents prior to *Festo* to correct mistakes made in the PTO. *Festo* merely makes it clear that the doctrine is not available for amended claim elements amended by mistake. Chances are it wasn’t available anyway under prior law and surely prior law was not available as a matter of routine to prevent copying. In short, would-be copyists have been able for your to exploit mistakes made by the patentee in obtaining its patent. That is the way it should be for there ought to be a penalty for drafting errors that were reasonable foreseeable. To do otherwise is to fail to treat the PTO seriously.

Judge Michel then went on to analyze Supreme Court and Federal Circuit opinions which he believes argues strongly for the flexible approach. He concluded his long dissent:

Copyists will be able to apply today’s ruling, using the fail-safe method noted above, to avoid liability in many, if not all, areas of technology. Biotechnology is one critical field of technology that may be particularly harmed by today’s ruling. Completely barring resort to the doctrine of equivalents for amended claim limitations may drastically limit the scope of protection for biotechnology patents, such as those claiming a protein molecule. . . .

A protein molecule can only be claimed as the complete and specific sequence of amino acids comprising the protein. . . . The particular amino acids that comprise a protein chain are frequently interchangeable with other amino acids without changing the protein or its functions. As our court noted with respect to a patent claiming the protein erythropoietin, “over 3,600 different [protein] analogs can be made by substituting [interchangeable acids] at only a single amino acid position, and over a million different analogs can be made by substituting three amino acids.” *Amgen, Inc. v. Chugai Pharm. Co.*, Many such analogs are functionally identical to the claimed protein. Thus, a competitor

¹⁰56 P.Q.2d at 1897-98.

seeking to make, use, or sell a protein that is protected by a patent containing an amended claim limitation will only have to substitute at a particular location in the chain an interchangeable amino acid for the particular amino acid recited in the patent claim as occupying that location. It appears that, in order to thwart such copying, a patent applicant would have to disclose and claim every single analog that is functionally equivalent to the claimed protein. Considering the vast number of specific amino acid sequences that an applicant would be forced to disclose and claim in order to secure meaningful protection for his invention, I feel the majority's rule puts an impossible burden on both the applicant and the PTO.

The majority gives no hint of the magnitude of the effects that will ensue from its new rule. The vast majority of patent applications contain claims that are initially rejected in view of the prior art, and are only allowed after being amended. Patent prosecution is an iterative process in which the applicant typically submits claims that are thought to be allowable, the examiner rejects the claims in view of the prior art, and the applicant then amends the claims to traverse the examiner's patentability rejections. . . .

Today's ruling may prove impractical because it provides that the mere act of amendment to traverse a patentability rejection eliminates all protection under the doctrine of equivalents, even for equivalents that were not the subject of the amendment. This is ill-suited to the iterative process by which patent applications are prosecuted. . . .

Rather than acquiesce to patentability rejections and thereby surrender all recourse to the doctrine of equivalents, applicants will be increasingly likely to file administrative and judicial appeals. The PTO Board of Patent Appeals and Interferences is already backlogged and often takes years to decide an appeal. Neither the PTO, nor our court, is prepared to handle any significant increase in such appeals. Such an increase could result in a significant lengthening in the average time and cost required to prosecute an application to issuance.

Furthermore, this court's imposition of a complete bar creates a perverse incentive for patent applicants, particularly those who are financially unable to invoke the appeals process, to simply abandon their applications. In many cases, it may be more effective to protect an invention by maintaining it as a trade secret than by accepting a patent that will publicize the invention, but provide protection only from literal infringement. . . .

The effect of today's ruling upon previously-issued but unexpired patents may be dramatic. While I cannot predict all the consequences that may flow from today's decision, I think it is safe to say that the majority's rule will reduce the effective scope, and thus, the value, of most of the 1,200,000 patents that are unexpired and enforceable. Wholly apart from other long-term effects of the majority's rule, I feel that today's ruling will be unfairly disruptive of existing

commercial relations. Today's ruling offers no "grandfathering" provision for the vast numbers of unexpired patents that contain amended claim limitations, and thus that will become increasingly susceptible to copying under today's new rule. Patent applicants who prosecuted their claims under the rule of a flexible bar will have protection limited now by our new rule of complete estoppel. As today's adoption of the complete bar was utterly unpredictable, these applicants had no way to avoid the harm that now befalls them.

I think that today's ruling might most directly impact untold numbers of licensing agreements that are predicated on the assumption that patent claims with an amended limitation are still entitled to a range of equivalents. Licensees will be tempted to exploit today's ruling using the method for liability-free copying discussed above. A licensee could make a minor substitution of a known interchangeable element for an amended claim limitation, and then correctly claim that it is no longer practicing the patented — and licensed — invention. The licensor would then be powerless to enforce the license because the amended claim or claims simply would not cover the licensee's newly-modified product or process.¹¹

Judge Linn wrote a long dissent that first focused on whether it was rational to distinguish between an unamended and an amended claim element.¹² Then he argued policy:

The majority contends that the certainty provided by the complete bar approach to amended limitations "will stimulate investment in improvements and design-arounds because the risk of infringement will be easier to determine." . . . However, in my opinion, limiting the patentee to protection of only the literal language of an amended claim limitation is not likely to promote the progress of the useful arts. Rather, the majority's new bright line rule, by constraining limitations amended for a statutory purpose to their literal terms, is likely to encourage insubstantial changes to an established product, rather than investment in break-through technological advancements. Such a rule, therefore, promotes free riding and undercuts the return on a patentee's investment.

In other words, the majority's new rule hands the unscrupulous copyist a free ride on potentially valuable patented technology, as long as the copyist merely follows the prosecution history road map and makes a change, no matter how trivial or insubstantial, to an element otherwise covered by such a narrowed claim limitation. Every other detail of the patented invention may be imitated with impunity. Such an "unscrupulous copyist" appropriates the substance of the invention while avoiding the letter of the claims, yet adds nothing to the technology. The copyist, transformed as a lawful competitor, can take refuge in the excuse that if the

¹¹56 P.Q.2d at 1912-13.

¹²This aspect of the opinion is discussed in the section of this write-up that focuses on whether *Festo* will ultimately apply to unamended limitations subject to estoppel by argument as well as unamended limitations in a claim that relate to a more broadly defined element in a rejected claim.

patentee wanted better coverage, the claims should have been prosecuted more competently.

As our predecessor court aptly stated: "to allow literality to satisfy the test for infringement would force the patent law to reward literary skill and not mechanical creativity." *Autogiro Co. of Am. v. United States*, . . . I do not think that is how our patent system or any patent system was intended to work. Patent laws seek to benefit the inventor's genius, not the scrivener's talents. . . . The majority's new rule, which sanctions the behavior of the copyist who avoids the letter of the claims and adds nothing to the technology, is likely to be a disincentive for inventors to bear the commercial risk in developing and disclosing new technology.¹³

Judge Linn is simply reiterating that the majority view will assist unscrupulous copyists under certain circumstances. He does not clearly explain why such mistakes by patentees should be corrected by the doctrine of equivalents. Moreover, he makes no attempt to deal with the costs of the uncertainty created by the doctrine of equivalents.

Judge Newman wrote a wide-ranging dissent in which she disagreed with more than merely the removal of the doctrine where there was an amended element in a claim. However, her opposition too is rooted in policy:

The modern industrial economy is driven by technologic innovation. It has long been understood that technological advance and industrial vigor flow from legal and economic policies that encourage invention and support investment in the products of invention. . . .

The encouragement of invention and investment in new ideas and their embodiments is a primary function of patent systems, aimed at the national purpose of development of new industries, improved productivity, increased employment, and overall economic growth as well as technologic advance. There is burgeoning modern scholarship directed to studies of invention, investment, and patent systems, Critical attention has been given to aspects such as the nature of the technology, the rate of technologic change in the particular field, the maturity of the field, the cost of invention and development for various technologies, market risks and competitive structures, the ease and cost of imitation, and the choice between disclosure in patents and maintaining the technology in secrecy. International patenting and trade aspects have been explored, as well as the cost of patenting and the cost of enforcement. . . .

The field of innovation study has evolved to include such complexities as "sequential" innovation, wherein one invention follows from the disclosure of another,

It is well recognized that all of these aspects have varying weights, and that the circumstances surrounding the development and utilization of intellectual property are extremely diverse. Indeed, commentators complain that a single patent

¹³56 P.Q.2d at 1919-20.

policy and patent law are unsuited to the range of scientific and commercial activity in today's economy.

Thus scholarship is providing rigor to understanding the role of intellectual property in innovation/competition policy, even as the limitations of economic models of invention, risk, and investment are recognized. Scholars writing in this field tend to introduce their analyses with a salute to complexity and an apology for their simplifications. However, within the growing body of scholarship, studies of the relationship between industrial innovation and optimal patent policy weigh against the majority's policy decision here. . . .

It is generally agreed that long-term economic growth requires a policy framework that encourages the creation and commercialization of new technologies, as contrasted with a policy that facilitates appropriation of the creative product, lest the creative product dry up in the face of too-easy appropriation. "Knowledge capital," secured by intellectual property rights, now rivals the traditional economic components of labor productivity, capital formation, and natural resources, as the foundation of economic growth. . . .

The inventor and the imitator are affected by quite different economic considerations. The innovator takes the risk of commercial success or failure of new things in new markets — the risk of unfulfilled expectations, obsolescence, regulation, technologic failure. The imitator bears none of these risks; he is interested only in the successful products, not in the failures; he is interested only in the profitable products, not the marginal ones; he moves in only after the invention has been made and tested and the market developed, and can operate at lower margins. The patent system provides weight on the side of the innovator, aided by the doctrine of equivalents and its inhibition of close copying, establishing an incentive whose value has been tested by time. However, it is also well recognized that competition is essential to a healthy economy. Achieving the optimum balance of these factors is of vital national importance. A major policy change in the foundational law affecting innovation and competition should not be made without adequate study of its consequences.

Although there is burgeoning literature on technologic intellectual property rights, the doctrine of equivalents has not, of itself, been a major focus of legal and economic scholarship. I suspect this is due to the complexity of the issue, the variety of factual applications, the diversity of technologies, the breadth of interacting influences on patentees' and competitors' activities, and the complex nuances of competition at the edge of the products of others. . . . The questions raised by the doctrine of equivalents are not quite the same as those of patent "scope." The issue of "scope" is directed to aspects of literal claim breadth, The question of equivalency is quite different. Infringement under the doctrine of equivalents is available only against what is indeed the same invention with only insubstantial change, as contrasted with issues of broad claims for broad but undeveloped concepts. Equivalency is a judgemade response to the pernicious literalism of the system of claiming, not an enlargement of the scope of the invention.

My colleagues in the majority make the error of the "simplified model," which assumes a continuing supply of new products, and ignores the prior steps of invention and commercialization. The majority concludes that the elimination of liability for infringement based on equivalency will be of public benefit: "The public will be free to improve on the patented technology and design around it Certainty will stimulate investment in improvements and design-arounds." However, the assumption that placing new technology in the public domain is always the optimum path to industrial growth is not supported by experience. Empirical studies have added rigor to the common sense knowledge that reduced profit opportunity affects the supply of capital to launch a new technology, and often the creation of the technology itself. . . .

The present patent law has supported a blossoming of technology-based industry in a competitive environment that is conspicuous for its entrepreneurial vigor. The balance among inventor, investor, competitor, and consumer, and the effect of the doctrine of equivalents on that balance, is not explored in the parties' briefs and had sparse amicus participation, for it was not at issue. Of course no patentee would choose to rely on the doctrine of equivalents to support commercial investment. The public and private interests served by the doctrine of equivalents derive from its deterrence of close imitation, thereby helping to assure to the patentee the benefit of the invention, while obliging would-be competitors to advance the technology instead of simply skirting the edge of the claims. Although its influence is not easy to quantify, it is generally accepted that the doctrine contributes to an industrial policy that seeks to support technologic innovation.¹⁴

While the economic studies referenced by Judge Newman are certainly interesting and relevant to an appropriate evaluation of the importance of the patent system, they have no bearing on the issues in *Festo*. *Festo* does not make a properly obtained patent less valuable, but it does slightly raise the cost of obtaining such a patent in that the applicant's attorney will have to be careful not to make mistakes. Of course, the applicant's attorney should have been doing that even prior to *Festo*. What *Festo* might actually do is to make patents more acceptable by relieving the public of the burden of infringement claims that are uncertain because of the vagueness of the insubstantiality test and the need to submit the decision on insubstantiality to a jury. Hence, *Festo* raises the costs of patent prosecution while reducing the costs imposed on the public relating to analyzing patent scope.

The key issue left unsettled by *Festo* is the status of prosecution history by argument as well as the meaning of an amended limitation. For example what if a patent has two claims and the second claim differs from the first only in that the second limitation of the claim is more narrowly drawn than the second limitation of the first claim? Then after a rejection of claim 1, should the second limitation be treated as an amended limitation? If the answer is no, then what patent attorneys should do is to draft hundreds of fine grained claims and simply cancel claims until they are left with a set that the examiner will allow? This would avoid the *Festo* rule.

The second major issue left by *Festo* is estoppel by argument. Arguments in the PTO made by applicants can do two things. One is that an argument can include a

¹⁴56 P.Q.2d at 1929-32.

definition of a word in a limitation which in effect narrows the limitation. This should be treated the same as any other amendment of a limitation under *Festo*. The real issue is where the scope of the limitation is not affected by the argument, but the argument relates to patentability and to one or more of the limitations. It seems that *Festo* would suggest that the *Festo* rule would apply to such a limitation.

Now let us turn to another situation which is sure to arise under *Festo*. What is clear is that a claim that is the subject of a first office action allowance has all of its limitations available for expansion under the doctrine of equivalents provided all of the other barriers, and they are many, are met. However, the applicant will have to draft fairly narrow claims in order to increase the probability of a first action allowance. In order to obtain more adequate claims the applicant will have a Vogel trailer¹⁵ on file to insert broader claims. What happens when one or more of such claims are rejected for reasons of patentability? Is an event that occurs as part of the prosecution, but after the patent-in-suit issues, one that can create a *Festo* bar with respect to a limitation?

¹⁵This term is discussed in Martin J. Adelman, Randall R. Rader, John R. Thomas, & Harold G. Wegner, *Patent Law 771* (West Group 1998). It is the filing of a continuation application to position the inventor to be able to claim his invention in different ways after his Q