PATENT DAMAGES, THE PATENT REFORM ACT, AND BETTER ALTERNATIVES FOR THE COURTS AND CONGRESS

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This paper offers comments on the amendments to section 284 of the Patent Reform Act, Senate bill 1145, January 24, 2008 version. This bill is described in Senate Report 110-259 of the Committee on the Judiciary also dated January 24, 2008. For reasons discussed in this paper, Congress should not enact these amendments in this form.

I. SUMMARY

Section 284 provides damages for patent infringement. There are many problems with the law of patent damages.[1] The bill addresses four problems. I discuss three of them. I ignore the fourth, patent marking under section 287.

The Problems with Reasonable Royalty Damages. The main premise of these amendments is that reasonable royalty damage awards frequently exceed the economic value of patented inventions. (sections II and III) The amendments address two problems with reasonable royalty damage awards.

One is that juries are not given useful guidance on how to apply the so-called *Georgia-Pacific* factors and the entire market value rule. The other problem is that damages are too large in many cases because damages are determined by multiplying an infringer's total revenue from sales of some product by some rate (such as X percent) and the infringed patent did not make available an entirely new product. The invention merely provided some addition or modification to an existing product. A similar issue arises when the revenue from sales of two products is used to measure damages and the infringed patent covers only one of them. The report also refers to the problem that arises when the infringed patent is merely one of many patents covering inventions used in the same infringing product. The amendments do not appear to address that problem.

The Proposed Solution. In response, the proposed amendments require that a judge pick one of three "methods" or theories by which reasonable royalty damages may be determined. (section IV.A.)

Entire Market Value Method. One "method" is the entire market value rule. S. 1145, section 284(c)(1)(A). The entire market value rule is not and should not be a separate theory of reasonable royalty damages. (section IV.B.) The entire market value rule is and always has been merely one step in the process of determining damages for lost profits (the rule's historical role) or an amount not less than a reasonable royalty (a role the rule has played more recently). If some courts are applying the entire market value rule as a separate damages theory or permitting juries to treat it as one, those courts are making a serious error under existing law. Rather than correcting that error, the amendments may be understood to require it.

There are also several versions of the entire market value rule. The amendments require use of a version ("the basis for consumer demand" test) that is sometimes applied in a way that fails to identify inventions that are responsible for the entire revenue and profits some infringer earns from the sale of some product. Most patents relate to some change to an existing product. Most companies charged with patent infringement could have sold a product without infringing the patent, a product without the patented change. Patents that make available an entirely new type

[1] I described the problems with patent damages in Chapter 13 of a book, *Patent Law, Legal and Economic Principles,* West Group (1992, 2d edition 2007) ("*Patent Law* § __"). See §§ 13:131 – 13:171.

of product are rare. Nonetheless, the courts frequently find that some patented variation of an old product is the basis for an infringing company's entire revenue and profits. The version of the rule the amendments would require contributes to this problem and would likely prevent the courts from employing a better approach.

The Valuation Calculation Method. Another optional theory is what the bill calls the "valuation calculation" rule. S. 1145, section 284(c)(1)(C). This rule may be applied if a judge decides the entire market value theory does not. (section IV.C.) When applicable, the amendments require that "...the court shall conduct an analysis to ensure that a reasonable royalty is applied only to the portion of economic value of the infringing product or process properly attributable to the claimed invention's specific contribution over the prior art." If this language means damages are the portion of the economic value of the infringing product properly attributable to the patented invention, the amendment is sensible in most situations, assuming the courts identify that portion of economic value in the proper way. The bill and the report do not identify the proper way to do so. There is a way well known to the law that I describe in a moment.

For reasons I will discuss later, the courts are likely to understand this language to have a different meaning, namely that damages are some portion of an infringer's total revenue attributable to the invention multiplied by a reasonable royalty rate. Again, the bill and the report do not say how to determine a rate that will lead to a sensible award when applied to this portion of revenue. If the rate is less than 100 percent, as the courts are likely to believe, damages will be too low. Given these issues, the ultimate effect of this feature of the amendments on total damages is unclear and, like the entire market value amendment, poses an obstacle to a better approach.

A Better Approach. This is the better approach. The perceived problems may be solved by using a principle the courts have recognized and applied in the context of lost profits, and have applied and perhaps not always recognized in the context of reasonable royalty damages. (section IV.F.) With some refinements discussed later, reasonable royalty damages should be the difference between the net profits the infringer earned from sales of the infringing product and net profits it could have earned using the next best non-infringing substitute available to it during the period of infringement. The economic value of the invention is this difference in profits. This approach to reasonable royalty damages solves the problem of patents to changes in existing products. This approach is entirely consistent with the origins and purpose of reasonable royalty damages. This approach is one feature of the existing law on reasonable royalty damages and fails to lead to sensible damages awards in all cases because other features of the law obfuscate its significance.

I believe it is likely this approach is what the amendments attempted to require when applying the "valuation calculation" rule. Section 284(c)(1)(C)("...the court shall conduct an analysis to ensure that a reasonable royalty is applied only to the portion of economic value of the infringing product or process properly attributable to the claimed invention's specific contribution over the prior art.") Properly understood, the "economic value of the infringing product or process properly attributable to the claimed invention's specific contribution over the prior art" is this difference in profits. Damages should be the amount of the difference.

This approach to reasonable royalty damages would also solve the problem with the "basis for consumer demand" version of the entire market value rule. By asking the same question, the law sensibly identifies patented inventions providing a patent infringer with its entire profits.

Whether applied to patents on changes in existing products or patents on entirely new products, if there was no substitute, the invention is responsible for all the net profits. This approach is how the Supreme Court has applied the entire market value rule for well over 100 years. This approach makes a separate entire market value rule unnecessary and misleading.

An Invention's Contribution over the Prior Art. There is one feature of the bill's definitions of the entire market value rule and the valuation calculation rule that requires an additional comment. Those definitions focus on the "claimed invention's specific contribution over the prior art." (section IV.D.) This language creates a significant risk that damages will be too large in many and probably most cases. This will happen if the courts interpret those rules to require measuring the economic value of some invention by comparing the value of products employing that invention with the value of products employing only prior art inventions (as the valuation calculation rule says and the entire market value rule could be read to say). Damages should be measured by the economic value of an invention at the time of infringement, not its value on the date an application for a patent was filed. This is the law and should remain the law. While the report indicates to me that the amendments do not intend to change the law in this way, history has shown that the words in the Patent Act take on a life of their own, because most people who apply the law do not know the purpose of the words and those who do know frequently forget.

Established Royalty. The third optional damages theory is the established royalty rule. S. 1145, section 284(c)(1)(B). The law now permits damages to be measured in that way. (section IV.E.) The amendments change the law by requiring that this theory take precedence over the valuation calculation rule. Damage awards should seldom be based on an established royalty. Damages measured in that way are usually too low. As importantly, if an established royalty is a preferred method for determining damages (as the amendments would require), there will be less licensing and more litigation in the future. For those two reasons, damages based on an established royalty should be the last resort and used only where it is clear the invention has some economic value and there is no other way to determine the amount of that value.

The Procedural Changes. The amendments also change the procedures for determining damages in the district courts. Judges would be required to select one of these three permissible damage theories for a particular case and to identify the "factors" the judge or a jury may consider in reaching an award. (section IV.G.) Even if I agreed with the three theories, I would not require a judge rather than a jury to select the one that is appropriate to some case or to select the right "factors" for determining damages. These requirements will simply add to the burdens of patent litigation for federal judges and the parties, and will not necessarily lead to better awards or to less time-consuming and expensive processes for deciding damages. While I agree with the report that the instructions given to juries on patent damages permit an extraordinarily wide range of awards and too often fail to point in an understandable way to a sensible award, I do not believe that problem is solved by requiring judges to select "factors" to consider. The multiple "factors" approach to reasonable royalty damages is a large part of the problem and not the solution.

The Problem of Increased Damages. The amendments also address the problem of increased damages. (section V.) Over the past twenty-five years, damages have been increased more often than they should have been. Since the early 1980s, the law has permitted damages to be increased if an infringer, after learning of a patent, failed to exercise reasonable care to avoid infringement liability. As understood and applied, this is not an appropriate standard for increasing damages. The amendments do not seem to correct that standard. Hence, they fail to address the basic problem. In late 2007, the Court of Appeals for the Federal Circuit attempted to correct the standard. I understand Senator Leahy proposed in March 2008 to replace this provision of the amendments with some language from the Court of Appeals' decision. While the Court of Appeals' decision is a step in the right direction, I would not amend the Patent Act to include language from this decision, because it is unclear to me that the Court of Appeals' new standard is the best solution to this problem.

Other Problems with Patent Damages. The law has several other features that make it difficult for damage awards to approximate the economic value of patented inventions consistently. Some of them tend to make awards too large and others too small. The net effect is that damages may approximate the economic value of patented inventions in some instances and not come close in others. The amendments do not address these other problems. (section VI.)

The Desirability and Substance of Legislation. Having criticized this bill, I should offer a better alternative. It is difficult to write an amendment to section 284 having clear concise language that would correct the major defects and leave alone the sensible features of current law. I have attempted to write such an amendment and a brief explanation of what that amendment is intended to do. (section VII.) However, at present, I would leave the problems to the federal courts. The courts have the power to correct the problems within the spacious charter of section 284. If the courts prove unable to do so after Congress has indicated its concern, Congress should then act.

II. THE AMENDMENTS TRY TO SOLVE TWO PERCEIVED PROBLEMS WITH REASONABLE ROYALTY DAMAGES

The amendments would change how damages are determined when, as the bill puts it, "calculating a reasonable royalty" under the existing statutory standard requiring "damages adequate to compensate for the infringement but in no event less than a reasonable royalty for the use made of the invention by the infringer." Some have suggested that damage awards are frequently greater than the economic value of patented inventions, when awarded in this way. The committee report seems to identify two problems.

One is that juries are given little useful guidance in calculating a reasonable royalty, particularly in how to apply the so-called *Georgia-Pacific* factors and the entire market value rule.[2]

The second is that damages are often too large when damages are measured by determining an infringer's total revenue from sales of some product (such as $1M) and multiplying that amount

[2] The committee report says "the current damage statute is vague and provides little guidance to judges or jury's determining the proper damage award, particularly when the award is based on the reasonable royalty standard." The committee report says "[j]uries are given little useful guidance in calculating that reasonable royalty ... ; often the jurors are presented with the fifteen "Georgia-Pacific" factors and some version of the "entire market value" rule, and then left to divine an appropriate award." (Footnotes omitted). I agree. See *Patent Law* § 9:04[3](1994)("There were two very different approaches to determining a reasonable royalty. Under one of them, factors bearing on the value of the invention were listed, the facts pertinent to them found, and some number divined from an undisclosed analysis of the circumstances.").

by some "rate" (such a 1 percent) to arrive at a total dollar award (such as $10,000).[3] The report suggests this method leads to excessive awards in many cases when the infringed patent is not for an entirely new product.[4] Many inventions relate to only one or a few parts of a product and suppliers sell the entire product at a single price. In this situation, damages are often calculated starting with the infringing seller's total sales revenue for the whole product. The report also refers the issue arising when a product embodies the inventions of more than one patent, the patents are owned by different entities, and a particular action is for infringement of one owner's patent. The problem is how to separate the economic value of this patent from the others. It is unclear whether the amendments attempt to address this issue.[5]

The report refers to testimony suggesting that awards are often excessive, because they are calculated starting from an infringer's total sales revenue.[6] With one exception, this testimony and a lawyer's paper in response do not describe the amounts of the actual awards.[7] Hence, it is

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[3] Damage awards based on compensation not less than a reasonable royalty are not always determined in this way. It is unclear whether the amendments would foreclose other methods.

[4] The report says the problem arises because " ... today's patents are often combinations, and many products comprise dozens, if not hundreds or even thousands of patents, and the infringed patent may well be one smaller part of a much larger whole." The report says that ". . . if juries award damages based on the value of the entire product, and not simply on the infringement - a danger exacerbated in some cases by overly expansive claim drafting - the damage awards will be disproportionate to the harm." A similar issue arises when the revenue from sales of two products is included in total revenue and the infringed patent covers only one of them. The problem is whether damages are based on sales of the patented product alone or on sales of both products. I am unclear whether this situation is also of concern.

[5] The amendments provide no hint about how to properly address this issue. I described how to solve this problem elsewhere. *Patent Law* §§ 9:39; 13:163-13:164.

[6] The report says, "[n]o doubt several alarming cases, which have captured the attention of the public and the Congress, represent the tip of the iceberg; these, not surprisingly, involve out-sized damage awards." (Footnote citing testimony of Professor John R. Thomas omitted). I have read Professor Thomas' testimony, where he says "case law and empirical evidence alike reveal that the courts are inclined towards awarding damages that may far exceed an individual patent's contribution to an infringing product." He then briefly describes ten decisions in which damages were calculated starting from an infringer's total revenue on sales of a product when the invention related to only one component or on sales of two products when the invention related to only one of them. He says one award was a 6 percent royalty on something. He says nothing about the actual award in the others.

[7] This paper is by William C. Rooklidge titled "Reform of Patent Damages: S. 1145 and H.R. 1908", taking issue with Professor Thomas' analysis. This paper may be found of the web site of The Coalition for 21st Century Patent Reform (www.patentsmatter.com). Mr. Rooklidge also does not tell you the actual award in the cases. The exception is a $1.52 billion damage award against Microsoft in *Lucent v. Gateway* that Professor Thomas mentions. Professor Thomas does not describe the basis for that award. Mr. Rooklidge points out that part of the reason for this award was improper use of worldwide revenue to measure damages and criticizes the jury instruction on the entire market value rule.

unclear that patent damages are systematically too large in these situations. The amendments seem premised on the view that, if so-called reasonable royalty damages are calculated starting from total sales revenue, they will be excessive regardless of the rate. Starting with total revenue does not mean that actual awards were necessarily out of proportion to the economic value of the inventions. If the rate was sensibly determined, the actual awards may be sensible. This testimony attributes the perceived problem to the entire market value rule.[8]

III. HOW THE AMENDMENTS ATTEMPT TO SOLVE THESE TWO PERCEIVED PROBLEMS

Those familiar with the amendments and report should skip this section.

First, the amendments require that a judge "shall determine which of the following [three] methods shall be used by the court or the jury in calculating a reasonable royalty pursuant to subsection (a)."[9] Subsection (a) contains the exist requirement for "damages adequate to compensate for the infringement in no event less than a reasonable royalty for the use of the invention made by the infringer."

Second, the amendments say that, "[u]pon a showing to the satisfaction of the court that the claimed invention's specific contribution over the prior art is the predominant basis for market demand for an infringing product or process, damages may be based on the entire market value of that product or process."[10]

Third, "[u]pon a showing to the satisfaction of the court that the claimed invention has been the subject of nonexclusive licensing for the use made of the invention by the infringer" and a number of other conditions are satisfied, "damages may be determined by the basis of the terms

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[8] Professor Thomas believes that the entire market value rule has effectively become the "default damages principle" and that, in lost profits cases, "the contemporary practice" is that a patent owner's entire lost profits are the basis for damages. The reported decisions do not indicate to me that either conclusion is necessarily true. Mr. Rooklidge's paper indicates that he believes the entire market value rule is playing a sensible role and that the decisions referred to by Professor Thomas are merely cases where application of the rule was difficult. Professor Thomas' description of the cases suggests to me that most of those cases involved improvement inventions. The infringers could have sold something without infringing, and the inventions were unlikely to have been responsible for the infringer's entire profits. Mr. Rooklidge gives me little reason to believe that, if the infringers in these cases had not sold the infringing product, they would have sold nothing. Therefore, if the damages awards in the cases Professor Thomas studied were the infringer's entire net profits from sales or a very high percentage of those profits, and these decisions are a representative sample of most recent decisions, something may be going systematically wrong. I do disagree with Professor Thomas' conclusion that the result in *Micro Chemical, Inc. v. Lextron, Inc.*, 318 F.3d 1119 (Fed. Cir. 2003) was necessarily wrong. See *Patent Law* § 13:140.

[9] The report says the judge is required to determine "... whether the case is one that falls within the 'entire market value' domain, the 'marketplace licensing' domain, or outside both those realms."

[10] The report says under new section 284(c)(1)(A), "the entire market value rule may be applied if the patented invention's contribution over the prior art is the predominant basis, and not just one of several bases, for the market demand of the infringing product or process." The report says the committee intends this section to be a "codification of the existing law regarding the entire market value rule."

of such license." The same approach may be applied if "sufficiently similar noninfringing substitutes" have been licensed in the required manner.[11]

Fourth, after a judge has decided that the so-called entire market value rule and the established royalty rule are inapplicable, the judge shall "conduct an analysis to ensure that a reasonable royalty is applied only to the portion of economic value of the infringing product or process properly attributable to the claimed invention's specific contribution over the prior art."[12] The amendments also say that, "In the case of a combination invention whose elements are present individually in the prior art, the contribution over the prior art may include the value of the additional function resulting from the combination, as well as the enhanced value, if any, of some or all of the prior art elements as part of the combination, if the patentee demonstrates that value."[13]

Fifth, the amendment says "[t]he court shall also identify the factors that are relevant to the determination of a reasonable royalty, and court or jury, as the case may be, shall consider only those factors in making such determination."[14] The bill says that, "[w]here the court determines it to be appropriate in determining a reasonable royalty ..., the court may also consider, or direct the jury to consider, any other relevant factors under applicable law."[15]

Sixth, the bill says that "[t]he method for calculating a reasonable royalty described in subsection (c) [the new provisions] shall have no application to the calculation of an award of damages that

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[11] The report then says that new subparagraph (c)(1)(B) "provides that the royalty may be based on other comparable, nonexclusive licenses of the patented invention if they there has been a sufficient number of licenses to indicate a general marketplace recognition of the reasonable of the licensing terms." The report says the committee "heard that in many instances existing licenses of the patent can be one of the better indicators in determining an appropriate royalty to compensate for infringement."

[12] The report says that new paragraph (c)(1)(C) "requires that if neither (A) [the entire market value rule] or (B) [the established royalty rule] is applicable, the trier of fact ensures that the damage award accurately reflects the harm caused by the infringement; no methodology is prescribed by this determination, but the jury is simply admonished to apply the reasonable royalty calculation only to the portion of the economic value of the infringing product or process properly attributable to the claimed invention's specific contribution over the prior art." The report goes on to say "[t]he Committee intends 'specific contribution over the prior art' to mean the reason to patent was allowed in view of the existing information that time of the invention." In a footnote, the report says the term "specific contribution over the prior art" is meant to capture "what has been variously described as 'the actual invention,' 'the gist of the patent,' 'the reason to patent issued.'"

[13] The report says that "[i]n the case of a combination invention whose elements are present individually in the prior art, the contribution over the prior art may include the additional function and enhanced value resulting from the combination, if any, if the patent owner demonstrates that value."

[14] The report says the "judge must also identify for the jury all, and only, the relevant factors in determining a reasonable royalty."

[15] The report says this section (c)(2) preserves the courts ability to consider and permit a jury to consider any other relevant "factors" including the *Georgia-Pacific* factors and others.

does not necessitate the determination of a reasonable royalty as a basis for monetary relief ...."[16] This means these amendments are to have no effect in determining lost profits damages.

IV. THE AMENDMENTS ARE UNLIKELY TO IMPROVE DAMAGE AWARDS AND ARE LIKELY TO PREVENT SENSIBLE AWARDS

A. The Amendments Change the Law by Requiring Use of One of Three Supposed Methods of Determining Reasonable Royalty Damages

The amendments require a judge to pick one of three "methods" or theories to be used "in calculating a reasonable royalty" - the entire market value method, the established royalty method, or what the bill describes as the "valuation calculation" method. The amendments require that some methods take precedence over others. The entire market value method has first preference and must be used if a judge finds it applicable. The established royalty method has next preference. If the established royalty method applies, the valuation calculation method may not be used. The valuation calculation method has last preference and may be used only if the entire market value and established royalty methods are inapplicable. This is not the law. Today, there are two only theories – an established royalty and a reasonable royalty. The amendments seem to establish a new one – the entire market value rule. Today, the established royalty rule does not necessarily take precedence over the reasonable royalty rule. I discuss the desirability of these two changes in a moment.[17]

B. The Entire Market Value Rule Is Not a Separate Theory of Reasonable Royalty Damages and the Bill's Version of that Rule Fails to Identify Inventions Responsible for the Entire Profits from Sales of a Product

The amendments say in a section titled "Entire Market Value" that if the "claimed invention's specific contribution over the prior art is the predominant basis for market demand for an infringing product or processes, damages may be based on the entire market value of that product or process."[18] There are several undesirable aspects of this amendment.

First, the amendments say this is one "method" that may be used "in calculating a reasonable royalty." The means the entire market value rule will become a separate theory of reasonable royalty damages. Today, it is not. The Supreme Court used the entire market value concept as one step in deciding damages based on a patent owner's lost profits or an infringer's profits or

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[16] The report says section (d) "clarifies that these changes have no effect on damages awards not based on reasonable royalty calculations." The report say the Committee intend that these changes "will not have any effect' on determining lost profits.

[17] Sections IV.B. and IV.E.

[18] The report says Congress intends "this section to be a codification of the existing law ... ." The report cites the Court of Appeals' decision in the *Rite Hite v. Kelley* in 1995, a decision primarily involving the standard used to award lost profits damages. *Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1546, 1548-49 (Fed. Cir. 1995). *Rite-Hite* did not say the entire market value rule applied where "the claimed invention's specific contribution over the prior art is the predominant basis for market demand for an infringing product or process." The court simply noted a variety of formulas it had used in addressing a variety of different situations.

gains.[19] The Court of Appeals for the Federal Circuit also used it as a step in determining compensation not less than a reasonable royalty.[20] If the courts are treating the entire market value rule as a separate theory of reasonable royalty damages or permitting juries to apply it as a separate theory, they are making a serious error under current law. If the amendments are interpreted to mean that this rule is a separate method of determining damages (as the amendments say), the amendments are making an important change in the law.

Second, if the courts are applying the entire market value rule to mean that, where the rule applies, reasonable royalty "damages may be based on the entire market value" of some product (as the amendments provide), the courts are making another serious mistake. The "market value" of a product is the revenue received from its sale. If the courts interpret the amendment's words "based on" to mean "measured by" or a jury understands them to have that meaning, the amendment will mean that damages may be the entire revenue the infringer earned from its infringing sales. Patent damages have never been and should never be measured by the total revenue received by some infringer.

Third, if the courts interpret the words "damages may be based on the entire market value" of an infringer's product to mean that reasonable royalty damages may be the entire net profits an infringer earned from those sales in all cases or a jury understands them to have that meaning, the amendment will again mean that patent damages will exceed the economic value of inventions in many cases. Damages will exceed the value of inventions, because the test for applying the rule does not necessarily identify inventions having that value, as I explain in a moment.

Fourth, if the courts interpret the words "damages may be based on the entire market value" of an infringer's product to mean only that reasonable royalty damages may be determined starting from an infringer's total sale revenue and instruct juries that those words have only that significance (and the juries understand), the amendment will have no predictable effect on damages, because the actual award will depend on the rate. The amendment provides no standard for determining the rate. However, when Congress declares that "damages may be based on the entire market value" of an infringer's product, I would expect courts and juries to take those words as a signal that the rate should result in an award approximating an infringer's total net profits. To say that an invention provided a product with its entire value comes close to saying that the invention provided a patent infringer with its entire profits on those sales. Again, this will lead to damages awards that are too high in many cases.

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[19] The rule was used to decide whether damages should be all or only a part of a patent owner's lost profits or an infringer's profits or gains. Where the entire market value rule was satisfied, the award was the patent owner's entire lost profits or the infringer's entire profits or gains. Where the entire market value rule was not satisfied, the apportionment rule applied to identify as damages some part of the patent owner's lost profits or the infringer's profits or gains. The Supreme Court applied that process in many decisions in the 1800s.

[20] In the 1980's, the Court of Appeals began to say that the entire market value rule applied to determine whether an infringer's entire revenue from sales of some product or products should be used as the starting place to measure reasonable royalty damages. That court's versions of the rule were not a separate method of determining reasonable royalty damages. That court did not say that, where the rule applies, reasonable royalty damages may be based on the entire market value of some product.

Fifth and perhaps most importantly, the amendment says the entire market value rule applies in this context if some invention is "the predominant basis for market demand" for an infringing product.[21] The Court of Appeals for the Federal Circuit sometimes says the entire market value rule applies if some invention is "the basis for market demand" for some product.[22] The Court of Appeals often seems to identify the "basis for market demand" by asking only whether a feature some invention provides is one consumers regard as important to their decisions to buy or perhaps is merely a feature the infringer mentions in its advertising and promotion. In other decisions, the Court of Appeals seems to ask the additional question whether the infringing company could have supplied a next best non-infringing product and whether its customers would have bought that product.

The fact that consumers regard some feature as important does not mean that feature is responsible for the entire demand for that product. For example, imagine someone patented a modification to automobile engines that provided a 2% increase in gas mileage. Many automobile companies redesigned their engines to include that modification without a license. All these companies emphasized gas mileage in advertising. Everyone who bought a car during a period of historically high gasoline prices did so at least in part based on gasoline mileage. Should the patent owner be entitled to a reasonable royalty approximating the entire profits from sales of cars with this feature? Under the amendments, the answer is yes. This result is obviously wrong. It is possible to make perfectly good automobiles without that feature. If that patented feature were not available, almost everyone who bought a car having the better mileage would have bought a car with slightly worse mileage.

As mention earlier, the report cites testimony from one witness at a hearing as the basis for the conclusion that damages are "outsized." That testimony described ten cases. The "basis for consumer demand" rule was applied in several of those cases. Based on that testimony, the "basis for consumer demand" rule is the cause of at least some of the problem and I would

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[21] The "basis for consumer demand" test appeared in *TMW Mfg. Co. v. Dura Corp.*, 789 F.2d 895, 901 (Fed. Cir. 1986)(the court cited two decisions as the basis for that test; neither decision states such a test). There are other more helpful formulations of the entire market value rule employed by the Court of Appeals for the Federal Circuit. The amendments would likely preclude their continued use.

[22] The amendments depart from the Court of Appeal's standard when it says the entire market value rule applies when an invention is merely the "predominant" basis for product demand. It is unclear whether this change is intended to make it more difficult or easier to prove that the rule applies. My assumption is that this change is a reaction to decisions saying that the entire market value rule does not require that the invention is the sole basis for consumer demand and it is sufficient that the invention is merely one of many sources of consumer demand. Those decisions are wrong. If this change is designed to correct those decisions, it is a minor step in the right direction. However, this change does not go far enough. The courts could easily interpret those words to mean that if some invention is basis for 51 percent of market demand, a patent owner should be awarded damages based on the incorrect view that the patent is the basis for 100 percent of market demand. Indeed, under the amendments, the courts might base damages on the entire value of a product if an invention is even less important. For example, if there are four features that drive consumer buying decisions, the patented feature accounting for the 30 percent of demand and three unpatented features each accounting for 20 percent, a court might easily conclude that the invention is the predominant (that is, most important) basis for consumer demand and again improperly base damages on the conclusion that the invention is responsible for 100 percent of demand.

expect Congress to change that rule. Instead, these amendments make this rule a permanent feature of patent law and implicitly forbid use of any other approach to measuring reasonable royalty damages when this rule applies.

Sixth, the law measures the economic value of an invention embodied in some product of a patent infringer only if it asks, "What were the profits an infringer earned by selling a product with the patented feature or component, and what would be the infringer's profits from selling a product with the next best non-infringing substitute feature or component available to it during the period of infringing sales."[23] The difference measures the economic value of the invention to the infringer at the pertinent time.[24] In the example, the law will identify the value of the gas saving invention only by comparing the value of cars with 2 percent better mileage to the value of cars without that mileage improvement.

Under the Supreme Court's decisions, damages may be based on an infringer's entire net profits from its sales only when, if that infringer had not employed the patented invention, it would have earned no profits from sales to the same customers, because it would have been unable to sell them anything. It is possible that the courts might interpret the "basis for consumer demand" test to have that meaning.[25] However, this is unlikely, because that is not how the Court of Appeals for the Federal Circuit always appears to apply this rule and the language of the amendments reveals no dissatisfaction with the Court of Appeal's approach. The result is that the amendments will prevent the courts from using a different approach that would solve the problem the amendments attempt to address and that the law, properly understood, now requires.

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[23] I pointed this out in 1992. See *Patent Law* § 9:05[2][C](1992). The current version is *Patent Law* §§ 9:19; 13:137-13:141 (2006). There are other necessary steps to measuring the economic value of the invention. See *Patent Law* §§ 13:148 - 13:162 (2006).

[24] *Patent Law* § 9:19 ("A patent owner was awarded the infringer's entire profits only if it proved that the infringer would have made no profits had it not used the particular invention for which damages were being assessed. In other words, there was no substitute technology that the infringer could have could have used and made at least some profits." (footnotes explaining cases omitted)). It is appropriate to measure a reasonable royalty by an infringer's entire net profits from its sales (net also of a normal return on investment) only in a situation where (1), if that infringer had not employed the patented invention, it would have earned no profits from sales to the same customers, (2) products containing the patented invention could have been made and sold without using inventions covered by patents owned by others, and without using, in at least some situations, inventions covered by patents owned by the infringer, and (3) perhaps without use of other resources specific to use of the invention purchased or developed through significant investments by the infringing company for which a normal return is inadequate.

[25] If there would have been no demand for a product without the patented feature or a product with the next best non-infringing substitute feature used in its place, the patented feature is the source or "basis" for the demand for the entire product. Under those circumstances, the demand for the patented invention is the total difference between the demand for the product with the feature and its production cost. That is so because there is no alternative invention available that would have permitted the infringer or anyone else to capture any part of those profits. If there would have been demand for such a product, then the value of the patented feature (and the invention) is the difference between the profits earned from selling the product with the patented feature, and the profits that would have been earned from selling the next best non-infringing alternative. See, *Patent Law* § 9:19.

Seventh, patent damages should not be limited to the market value of an infringing product, as the amendments command. If an invention may be used by a patent owner or someone else to obtain greater profits than those earned by an infringing company, the economic value of that invention should be measured by the greater value the invention would have had when used by the patent owner or that other company. The law is clear today that, when an invention would have had greater value when used by the patent owner in the absence of infringement than when used by some patent infringer, reasonable royalty damages are not limited to the market value of the infringer's product.[26] The amendments might change that important rule.

Finally, the amendment requires that the "basis for consumer demand" version of the entire market value rule applies to infringing processes. However, this rule is useless when applied to inventions that contribute to market supply rather than market demand. The amendments wrongly assume that damages should be based on the entire market value of product only when the invention enhances demand for product. There may be products for which there is enormous market demand. However, this demand is totally unsatisfied because it is impossible or too expensive to make the product. Some inventor then comes up with a cheap way to make it and patents that way. The invention is not the predominant basis for market demand. However, the invention is responsible for the entire profits from making and selling that product, and there is no reason damages should be limited as the amendments appear to do.

C. The Bill's Valuation Calculation Rule Does Not Require Damages Equal to the Economic Value of Inventions and Would Be an Obstacle to Sensible Awards

Under the amendments, if an invention's contribution is not the predominant basis for market demand (and there is no established royalty), the court must "conduct an analysis to ensure that a reasonable royalty is applied only to the portion of economic value of the infringing product or process properly attributable to the claimed invention's specific contribution over the prior art." This feature of the amendments addresses the apportionment issue and raises several issues and problems.

First, the amendments require that "a reasonable royalty is applied only to the portion of economic value of the infringing product" properly attributable to the claimed invention. This could mean two very different things. One is that the judge must separate out of total infringer revenue some portion that is properly attributable to the invention and assure that damages are determined by multiplying this portion of total revenue by a reasonable royalty rate. The other is that the judge must separate out of total infringer revenue some portion that is properly attributable to the invention and assure that damages are this portion of revenue.

The Patent Act requires "damages ... in no event less than a reasonable royalty …." A "reasonable royalty" is an amount of money, such as $1000, that constitutes the amount of damages. A "reasonable royalty" is not a royalty rate used to determine the amount of damages. The amendments are unclear because they say a "reasonable royalty" (an amount of money that is the damage award) is "applied to" some portion of "the economic value" of the infringing product (also an amount of money that is some part of an infringer's total revenue). Given the explanation of the reason for the amendments in the report, the courts are likely to find that the

[26] *Patent Law* §§ 9:40; 9:80.

amendments have the first meaning - damages are the portion of total revenue multiplied by a reasonable royalty rate. However, it is entirely possible the amendments are intended to mean that damages are the portion of total infringer revenue attributable to the invention. In the following discussion, I assume initially that the amendments have the first meaning.

Second, given this meaning, the premise for this amendment is not necessarily true. I mentioned the reason earlier. Reasonable royalty damages typically require determining a royalty rate and an amount of revenue to be multiplied by that rate. The Patent Act requires only that the final amount be no less than a "reasonable royalty for the use made of the invention by the infringer." The amendments seem premised on the view that damages are necessarily excessive when based on an infringer's entire sale revenue rather than a portion of that revenue. If you counted reported decisions, you would probably find that most reasonable royalty awards are derived in some fashion from the infringer's total revenue. This does not mean most awards are necessarily too large, because total revenue is multiplied by some royalty rate to determine the award. If an invention provided at least some increase in infringer revenue and the rate is sensible, the rate assures that damages properly measure the economic value of some invention.[27]

Third, given this meaning, a judge or jury may not merely determine a rate that assures a correct award. Assuming the "economic value" of a product means the revenue earned from its sale, the judge or jury must in some way try to allocate from total revenue some portion that is properly attributable to the invention and then try to determine a rate that leads to a correct award when applied to this portion of total revenue. The amendments do not say how the judge or jury is to go about identifying the portion of product revenue attributable to the invention. The amendments also do not say how the judge or jury is to go about determining a proper royalty rate to be applied to this portion of revenue. Sensible awards result only by applying a sensible rate to a sensible amount of money. Since the amendments and report do not tell the courts how to determine either the rate or the amount, it is entirely unclear to me how reasonable royalty damages will be determined after this amendment. My expectation is that they will be too low.

Consider an example of what is likely to happen under the amendments. Someone invents and patents a product. The patent owner is incapable of making and selling products and there was only one company that could. That company makes and sells without a license. The infringing company sells 125 units at the profit-maximizing price by a single supplier of \$275.[28] Production costs including a normal return on investment are \$150 per unit. The infringer earns net profits of \$15,625. There are other products of the same general type being sold by others.

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[27] There may be situations where total revenue is completely independent of the value of some invention and measuring damages by multiplying total revenue by some royalty rate is highly likely to lead to an excessive award. Based on Mr. Rooklidge's description of the damage award against Microsoft in *Lucent v. Gateway,* this may have happened there. Damages were apparently determined by multiplying the total revenue computer companies earned from selling computers by some rate. The defendant Microsoft licensed those companies to sell computers containing Microsoft's Windows Media Player software. The patents apparently related to features of this software related to audio signal processing. If features of software related to viewing audio material would have no impact on revenue from computer sales (as one might expect), damages based on some part of computer sales revenue could have no relation to the value of the inventions.

[28] This example uses the demand curves shown in Figure 9.13 at Patent Law § 9:76. See Appendix A.

Those products have some of the components also found in the patented product. If these companies were not selling those products, the demand for the patented product would have been larger and the infringer would have been able to sell more than 125 units at a price higher than $275. The patent owner sues and wins. These amendments control damages. The patent owner fails to show that the patented invention is the basis for consumer demand, because he or she is unable to prove that the features or functions of the product provided by using the invention are the reason consumers buy the product.

The judge conducts a hearing to receive evidence to ensure that a reasonable royalty is applied only to the portion of economic value of the infringing product properly attributable to the invention. The judge initially decides to determine the economic value of the product attributable to the invention by comparing the net profits the infringer earned by selling the patented product with the net profits the infringers would have earned from selling the next best non-infringing substitute product it could have sold. The next best product would have been somewhat inferior and could have been produced at the same cost. The infringer would have sold this product at a lower price, $225, sold fewer units, 100, and made lower profits, $7500 (its costs being the same, $150 per unit). The judge initially concludes that the value of the invention to the infringer is the difference in profits, $8,125 ($15,625 minus $7,500). This amount is about 24 percent of the infringer's total revenue, $34,375. The judge asks if there is any reason the court should not award reasonable royalty damages of 24 percent of the infringer's revenue, an award of $8,125.

The infringer says the judge does not comply with the requirements of section 284(c) of the Patent Act by making sure that the award is no greater than $8125. The infringer says the judge must determine what portion of the infringer's total revenue of $34,375 is attributable to the invention, so that a reasonable royalty rate may be applied to this amount to determine damages. The judge says that the court has already decided the portion of revenue attributable to the patented invention, $8,125. The infringer says the Act requires that a reasonable royalty be "applied" to this "portion" of the "economic value" of the product, and this means multiplying $8,125 by a reasonable royalty rate determined by considering the *Georgia-Pacific* and other factors the judge deems helpful. The judge says that rate is 100 percent. Any lower percentage will result in an award that is too low and any higher rate too large. The infringer says that 100 percent is inherently unreasonable because no reasonable company would agree to pay 100 percent of its revenue for a patent license in a hypothetical negotiation.

The judge asks for guidance on how to proceed. The judges asks if the Patent Act or its legislative history describes how the judge is to determine the portion of product value attributable to some invention or to determine a reasonable royalty rate to apply to that portion of value. The parties agree there is nothing.

The infringer says the portion of revenue should be based on the portion of manufacturing costs that resulted from the use of the invention. Thirty percent of total manufacturing costs involved making, purchasing, assembling, and testing the parts, components and subsystems needed to embody the invention in the product. While the claims of the patent refer to products having many components found in earlier products, the parties agree that these components perform the same functions they did in earlier products. On the basis of costs, the portion of the value of the product attributable to the invention is $10,313 (30 percent of $34,375). Applying the 24 percent reasonable royalty results in an award of $2,475, or about 34 percent of the value of the invention. The judge rejects the use of costs needed to add an invention to some product to determine the portion of the product value that is attributable to an invention.[29]

The judge decides that the reference to the "economic value" of a product must refer to product revenue, since sales revenue reflects buyers' views of the product's value. The judge notes that the difference between the infringer's revenue from sales of the infringing product and the alternative product was $11,875. Therefore, the judge says that is the portion of the infringer's revenue attributable to the invention to which the royalty must be applied.[30] The judge notes that in order to determine a reasonable royalty that will result in an award approximating the value of the invention, the appropriate rate is about 68 percent.

The infringer says this is not a proper way to determine the rate. The rate must be determined to be reasonable if applying to total revenue. The infringer says only in this way will section 284(c) achieve its purpose – to use a rate that would be reasonable if applied to an infringer's entire revenue and apply that rate to a portion of revenue to prevent excessive awards. The infringer says no reasonable licensee would agree to a 68 percent royalty rate. In this situation, the infringer says the licensee would have agreed to no more than a rate of 24 percent, since any higher rate would force the infringer to pay more than the invention was worth to it. Therefore, the portion of revenue attributable to the invention, $11,875, must be multiplied by the 24 percent rate, so that damages are $2,850. If the judge agrees, the patent owner's damages will be about 35 percent of the economic value of the invention.

The infringer also says that in the absence of a license, the patent owner would have made nothing. The patent owner would be better off granting a license for any rate greater than zero than refusing to license. The infringer as a potential licensee would be willing to license for any rate up to 24 percent of total revenue, and would pay no more. Therefore, in a hypothetical negotiation, the rate would be some rate greater than zero and less than or equal to 24 percent. In that situation, the infringer says the rate most likely to be agreed to is 12 percent, since at that rate the parties share equally in the gains the license makes possible. If the judge agrees, the portion of revenue attributable to the invention, $11,875, must be multiplied by the 12 percent rate, so that damages are $1,425, about 17.5 percent of the economic value of the invention.

I could illustrate other features of the way in which reasonable royalty damages are determined that would lead to damages of an even smaller percentage of the true economic value of this invention. However, this example should suffice to illustrate types of problems the amendments are likely to create.

Fourth, assume the amendments have the second meaning. The "portion of economic value of the infringing product or process properly attributable to the claimed invention's contribution" is

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[29] The judge notes that if the additional costs of using some invention are employed, damages for an invention that adds 10 percent to costs and 50 percent to revenue will be lower than damages for an invention that adds 50 percent to costs and 10 percent to revenue. Damage awards will be high for inventions that are very costly to use and add little to product value, and low for inventions that may be used at little cost and add a great deal to value, exactly the opposite of what patent law should do.

[30] The use of relative revenue to determine the portion of value will not reflect the value of the invention, where use of an invention and the next best alternative would involve different revenue and different costs. In that situation, the revenue difference will not reflect the profit difference.

the amount of damages. The result of the amendments will then depend on how the courts determine the portion of the economic value of the infringing product properly attributable to the claimed invention's contribution. There is a way consistent with current law that would lead to damages awards that measure the real economic value of the invention. It is the one the judge initially used in the example, the portion of revenue and the amount of damages is the difference between the net profits that use of an invention permitted the infringer to capture and net profits it could have captured using the next best non-infringing substitute available to it during the period of the infringing sales. If the amendments are interpreted in that way, the amendments will be a valuable change in the law, when applied in situations where the value of an invention as used by the infringer is the proper basis for measuring the invention's value.[31]

As the example illustrates, the amendments would be a valuable change only if the judge's or jury's job is done after it identifies "the portion of economic value of the infringing product or process properly attributable to the claimed [invention]." Multiplying that amount by some percentage less than 100 percent reduces damages to something less than the value of the invention. If the courts believe they must apply a "reasonable" royalty rate less than 100 percent to the portion of revenue attributable to the invention, damages will be too low.

Fifth, if the amendments were interpreted in this alternative way, notice that the entire market value feature of the amendments is unnecessary. The value of an invention is the difference between the net profits that use of an invention permitted the infringer to capture and net profits it could have captured using the next best non-infringing substitute available to it during the period of the infringing sales. If the infringer would have earned no profits using the next best alternative, the value of the invention is the entire profits the infringer captured. If the law correctly measures the value of an invention by determining the "portion of economic value of the infringing product or process properly attributable to the claimed invention's contribution," the law will correctly measure damages when 100 percent or 10 percent or 1 percent of the infringer's profits are attributable to the invention. There should not be one legal standard used to identify the 100 percent situations and a separate legal standard to identify the 99.99 to 0.01 percent situations. If that is correct, the amendments will prevent the law from the dealing successfully with these problems by requiring one legal standard for identifying the 100 percent situation (the entire market value rule) and a separate standard for the 99.99 to 0.01 percent situations (the valuation calculation rule). A sensible "valuation calculation" rule should govern all situations.

Sixth, under both of these interpretations, the valuation calculation amendments will likely pose an obstacle to a sensible award in two particular situations. One is where the invention is a process used in making a product. The second is where the invention is a product and the sole value of the invention is that the patented product may be made at lower cost. In those situations, the difference between the costs of manufacturing using the invention and manufacturing costs using the next best substitute will measure the value of the invention. In those situations, damages are properly awarded as some percentage of the cost savings. If the amendments are interpreted to require that some portion of total revenue be identified as attributable to the invention, there is no logical way to do so. The value of the invention in that

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[31] As mentioned earlier, it is not sensible to limit damages to the economic value an invention had as used by a patent infringer, where the invention would have had greater value if used by the patent owner or some other available potential licensee.

situation has nothing to do with product revenue, and the command of the amendments will simply befuddle lawyers and courts in making damage awards. For example, in *Grain Processing*, none of the revenue was properly attributable to use of the invention, because the patent did not permit the infringer to make any different or better product than it could have made using non-infringing substitute inventions. The invention had value only because it reduced manufacturing costs. Therefore, the courts quite sensibly measured damages by the cost savings provided by the invention and not by some nonexistent revenue gains resulting from the infringement.[32] The amendments could preclude that sensible result.

D. The Amendments May Lead to Damages Awards that are Too Large by Requiring that the Damage Awards be Based on the Claimed Invention's Specific Contribution Over The Prior Art

Damages may be based on the entire market value of an infringing product if "the claimed invention's specific contribution over the prior art" is the basis for market demand. Where damages are not determined in that way (and no established royalty exists), a reasonable royalty must be applied only to the portion of the economic value of the infringing product attributable to the "claimed invention's specific contribution over the prior art."

It is and always has been the law that reasonable royalty damages must be limited to the value of the patented invention. A patented invention is defined by the claims and the claims (if valid) inherently define the difference between that invention and prior art inventions. If these amendments simply mean that the judge must ensure that reasonable royalty damages are limited to the economic value of the claimed invention, they do not change the law. However, the amendments do not say that. Where the "valuation calculation" rule applies, the amendments require that a reasonable royalty be applied to the economic value of the infringing product or process properly attributable to "the claimed invention's specific contribution over the prior art."

If the courts interpret the amendments to mean damages must be measured by comparing the profits available, for example, from sales of products employing an invention and the profits available from sales of products made available by prior art inventions, damage awards will usually exceed the economic value of those inventions. The technical differences between the patented invention and prior art that justify granting the patent do not determine the value damages attempt to measure. Damages must measure the economic value of those technical differences at the time infringement occurred. Those technical differences may have had one value at the time a patent application was filed and a different value at the time of infringement.

For example, assume that on the date a patent application for an invention is filed, the invention would permit someone using it to capture additional profits of $100 per unit given the alternatives available for commercial use at that time. Suppose that two years later someone figures out and describes an alternative that has most of the advantages of the first invention and may be used at about the same cost. This alternative is not prior art. However, after that alternative becomes available, economic value of the original invention may have declined to $10 per unit and damages should be limited to $10 per unit for later infringing activities.

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[32] *Grain Processing Corp. v. American Maize-Products Co.*, 893 F. Supp. 1386 (N.D. Ind. 1995), aff'd in pertinent part, vacated in part, 108 F.2d 1392 (Fed. Cir. 1997), further decision on remand, 979 F. Supp. 1233 (N.D. Ind. 1997), aff'd 185 F.3d 1341, 1351 (Fed. Cir. 1999).

Damages will exceed the true economic value of the invention, if this alternative may not be considered.

The law on reasonable royalty damages has recognized from its inception that it is the substitute inventions available at the time of infringement that determine the economic value of any particular invention for this purpose.[33] The prior art does not define the world of alternative substitute inventions. If the amendments are interpreted to change that law and mean that substitutes that are not prior art are excluded from consideration (and there is nothing in the report to preclude that interpretation), damage awards will greatly exceed the economic values of inventions in many cases.

The report suggests this language focuses the attention of decision-makers on the specific contribution of an invention over the prior art to make sure that the way patent claims are written does not lead to a damage awards out of proportion to the novel and nonobviousness aspects of an invention that were the basis for the patent. For example, if an old product has ten main parts and an inventor improves one of those parts, the claim may describe the invention as a product having the nine old parts and the one new one. The form of the claim does not mean that the inventor has made an entirely new product. The amendments may simply be trying to make sure that damages are not measured by making the incorrect assumption that all parts of a product recited in a claim are new.

There should be no need to amend the Patent Act to address this problem. The law has been clear since at least the earliest days of reasonable royalty damages that the form of the claim does not determine how damages are measured.[34] Where a claim identifies old components (that is components found in prior art products) as well as new ones, the law insists that the courts not award damages based on the entire profits from sale of that product merely due to the form of the claim. Similarly, where damages are based on compensation not less than a reasonable royalty, the courts should attempt to ascertain what part of the profits are attributable to the new components or other new features that were the basis for granting the patent. If the courts have sometimes failed to understand what claims do and do not reveal about the actual invention,

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[33] *United States Frumentum Co. v. Lauhoff*, 216 F. 610, 620-22 (6th Cir. 1914); *Hunt Bros. Fruit-Packing Co. v. Cassiday*, 64 F. 585, 587 (9th Cir. 1894); *Cassidy v. Hunt*, 75 F. 1012, 1013 (N.D.Cal. 1896)(McKenna, J, Circuit Judge). See *Dowagiac Mfg. Co. v. Minnesota Moline Plow Co.*, 235 U.S. 641, 649-50 (1915)(where the Supreme Court endorsed the reasonable royalty approach to damages, citing with approval *U.S. Frumentum*, *Hunt Bros.* and *Cassidy*). The *Georgia-Pacific* factors include this concept though stated with less precision. *Georgia-Pacific Corp. v. United States Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970), *modified*, 446 F.2d 295 (2d Cir. 1971)("9. The utility and advantages of the patent property over the old modes or devices, if any, that had been used for working out similar results.").

[34] *E.g.*, *Egry Register Co.* v. *Standard Register Co.*, 23 F.2d 438, 440-41 (6th Cir.1928)("We have several times had occasion to say that the important matter in the connection was the actual invention as compared with the prior art, rather than the terms in which the claim may be formulated. ... He cannot, by the language in which is claim happens to take, transform his invention of an improvement in an existing structure into one of a complete structure, as if it were wholly new, so as to entitle him to profits on those parts of which were not in any fact since his invention."). The Sixth Circuit was one of the courts responsible for creating reasonable royalty damages in *United States Frumentum Co. v. Lauhoff*. *Ergy* is cited numerous times in *Georgia-Pacific*.

those courts have failed to understand the law.[35] If the courts have failed to explain to juries what claims do and do not reveal, juries have not been informed of the law.

E. The Establish Royalty Option Will Frequently Lead to Damage Awards that Are Too Low and Lead to Less Licensing and More Litigation

Under the amendments, if someone fails to make a showing that the entire market value rule is satisfied, the other necessary step before damages may be measured by the valuation calculation method is that someone has failed to show that there is an established royalty. If there is an established royalty, reasonable royalty damages are measured by the terms of such a license. The amendments make a serious effort to describe situations in which a particular royalty rate could be regarded as established in some sense as reasonable.

Since at least the 1880s, the courts have sometimes measured damages by a so-called established royalty. For a time, if an established royalty existed, damages were limited to the royalties that would have been paid under the licenses establishing the royalty. Today, even if an established royalty exists, a court may award damages in a different and larger amount. Under the amendment, this will no longer be the law. An established royalty precludes using the valuation calculation rule.[36] Under the amendments, an established apparently does not preclude use of the entire market value rule. It is difficult to understand why the amendments treat the entire market value situation differently, particularly when the entire market value rule is an important part of the perceived problem.

An established royalty should not be a preferred way to determine reasonable royalty damages.

In my view, there are at least four reasons why established royalty rates are highly likely to lead to damages that are too low.[37] One reason is that royalty rates in licenses are usually discounted based on the parties' perceptions of the probability that, if litigated, a particular patent would be found valid and infringed by the prospective licensee's activities. As those probabilities become lower, royalties become lower.[38] For purposes of measuring damages, the operative assumption is and should be that the patent is valid and the defendant has infringed. The probabilities are 100 percent. Therefore, damages should be higher than established rates.

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[35] I am aware of no reported decision in which a court awarded damages based on the entire profits an infringer earned from selling some product merely because the claim referred to all of the components or parts of that product. I have never read a decision in which a court said the claim refers to all of the components of a product and for that reason, damages must be determined based on application of the entire market value rule.

[36] This means an established royalty precludes addressing the apportionment issue.

[37] For a more detailed explanation, see *Patent Law* § 13:132. I also discuss this issue later in connection with using reasonable royalty terms in determining damages.

[38] I pointed this out over twenty years ago. See "Judicial Regulation of Patent Licensing, Litigation and Settlement under Judicial Policies Created in Lear v. Adkins," American Intellectual Property Law Association, Selected Legal Papers (1985); "A Lear v. Adkins Allegory," 28 Journal of the Patent and Trademark Office Society 427 (1986).

A second is that patent owners often face a difficult bargaining problem. They may not have a viable alternative to licensing some company and therefore be unable to make a credible threat not to license for payments less than the full economic value of the invention to the potential licensee. I illustrated this problem in the example. To take the owner's worst situation, assume that in the absence of a license, the patent owner will earn nothing. The patent owner would be better off granting a license for any rate greater than zero than refusing to license. Assume that in the absence of a license, the licensee is no worse off and with the license may earn addition profits of $10M. In that situation, the patent owner is unlikely to be able to negotiate a payment even close to $10M. The owner will do well to obtain half the additional profits, $5M.

Third, royalty rates in licenses are likely to be reduced to take into account uncertainty about the value some invention will have under future technological and market conditions. Damage awards are based on the past and should not be reduced because, if the parties have made the license before the infringement began, they may have reduced the rate because future economic conditions were uncertain.

Fourth, different licensees have different values for some invention in the same way different consumers have different values for some product. If the seller must sell to a number of customers at a single price, it will set the price was so that certain marginal customers will buy and this means some other customers will buy it for less than they would have been willing to pay. The same thing happens with licensing. While I would not argue strenuously with those who take a different view, my view is that there is no reason a high-value infringer should pay lower damages because some other licensee had lesser value for some invention.

There is another reason an established royalty should rarely limit damages. If an established royalty limits damages, the long-term consequence is that there will be less licensing and more patent litigation. The royalty rate at which patent owners and potential licensees are willing to license is determined in part by what damages will be if they do not license. If the law declares an established royalty to limit the amount of damages for infringement, patent owners will take this into account in deciding whether to grant licenses and potential patent licensees will take this into account in deciding whether to accept licenses.

If the license rate determines and limits damages, the decisions to license become enormously complicated. If a patent owner believes that licensing will reduce damage awards, the patent owner's incentives to license are reduced. If potential licensees perceived that they may limit their potential liability for damages if there is an established royalty, their willingness to license will be affected. If any one licensee believes that enough others will accept licenses to establish a royalty, and therefore put a cap on the damages that potential licensee will pay if it infringes, that licensee may decline to license for a time hoping that others will do so. If enough others do so, that company's potential damage liability is limited. That potential licensee then has a powerful incentive to infringe because it will be no worse off if it infringes than if it took a license, assuming that if it is found to infringe, it may switch to a non-infringing design and not be harmed by an injunction.

The amendments go beyond the law regarding determination of damages based on an established royalty by saying that an established royalty may be based on licensing of some other non-infringing substitute invention. The problems that attend using an established royalty for some patent to measure damages for infringement of that patent are compounded if the law permits the terms of licenses under other patents to limit those damages.

For these reasons, an established royalty should be used only where there is no better option and it is clear the patented invention is worth something. An established royalty should be the last resort to measuring damages.

F. These Amendments Will Likely Prevent the Courts from Adopting a Simpler and Better Solution

There is a better solution to the perceived problem of damages based on an infringer's total sales revenue.

In the context of lost profits, the entire market value rule is one rule applied to determine the amount of lost profits awarded a patent owner. The Court of Appeals for the Federal Circuit employs the same approach to applying the rule for that purpose. For that reason, the entire market value rule caused lost profits awards that were sometimes too high.[39] The law failed to properly measure the economic value of some invention. The courts in the *Grain Processing* decisions corrected that error by insisting that a patent owner's lost profits be measured by the difference between the profits that the patent owner lost due to the infringing sales and the profits the owner would have lost if the infringer had sold the next best non-infringing substitute product available to it at the time of infringement.[40] The courts in the *Grain Processing*

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[39] *Patent Law* § 9.05[2][d](1993)("If the goal of a damage award is to assess damages based on the value of the invention, then, as explained earlier, the derived demand for the invention must be assessed. Even if the infringer's activities caused the patent owner to lose sales or lower its price because the infringer's actual product was a closer substitute for the patent owner's product that it was for other substitute products being sold at the time, awarding the patent owner its entire profits from sale of that product may greatly exceed an award based upon the value attributable to use of the invention. The value of the invention is not necessarily equal to the difference between the demand for the product actually sold and its production cost. If there was a substitute invention available that would have permitted the patent owner or the infringer to generate 99 percent of those profits, then only 1 percent of them are logically attributable to use of the invention. In order to gauge the derived demand for the invention, it is necessary to assess the availability of substitute inventions. For that purpose, it is necessary to inquire about the nature and value of the product that the infringer could have made had it not infringed. Unless the law wishes to systematically over-reward patented inventions, it is necessary to make that inquiry."(footnote omitted)). See also, John W. Schlicher, *Does Patent Law Make Sense?*, ABA, Section of Intellectual Property Law, Patent, Trademark and Copyright Law: Litigation and Corporate Practice (April 1999)("The first difficulty arises because the legal standards do not explicitly say that in all cases we are trying to measure the value of the invention that we wanted the inventor to capture, and to measure that value by the difference between the profits available from exclusive use of that invention, and the profits available from use of the next best, publicly available, potential noninfringing substitute invention.").

[40] *Grain Processing Corp. v. American Maize-Products Company*, 185 F.3d 1341, 1351 (Fed. Cir. 1999)(Rader, J.)("Moreover, only by comparing the patented invention to its next best available alternative(s) - regardless of whether the alternative(s) were actually produced and sold during the infringement - can the court discern the market value of the patent owner's exclusive right, and therefore his expected profit or reward, had the infringer's activities not prevented him from taking full economic advantage of this right."), aff'ing, *Grain Processing Corp. v., American Maize-Products Co.*, 893 F.Supp. 1386 (N.D. Ind. 1995)(Easterbrook, J.).

decisions did not view the entire market value rule as an obstacle to that result.[41] The amendments apparently view this as the proper approach since they say nothing directly about how lost profits damages are determined and go so far as to admonish the courts not to use the amendments to change how lost profits damages are determined.

The amendments seem to ignore that, in the *Grain Processing* decisions, the courts applied the same concept in determining the amount of damages based on a reasonable royalty.[42] Under *Grain Processing*, reasonable royalty damages are the difference between the net profits that use of an invention permitted the infringer to capture and net profits it could have captured using the next best available non-infringing substitute during the period of infringement. The *Grain Processing* approach to reasonable royalty damages solves the entire market value and apportionment problem. When the courts grasp this aspect of *Grain Processing*, the problem of reasonable royalty damages should disappear. The problem of inventions that improve or add to old products should disappear.

If these amendments are enacted, this development becomes unlikely because the fact that Congress is taking this step will be taken as an indication to the courts that the law as it exists does not limit the amount of damages in that way and that some other legal doctrine was necessary to do so. Since the amendments and report do not point to *Grain Processing* as the

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[41] See, John W. Schlicher, "Measuring Patent Damages by the Market Value of Inventions Given Available Noninfringing Substitute Technology – The *Grain Processing, Rite-Hite* and *Aro* Rules," 82 Journal of the Patent and Trademark Office Society 503 (2000)("The *Grain Processing* decisions did not say they were applying the entire market value rule. This leaves it open for lawyers to argue that the entire market value rule trumps the *Grain Processing* rule. ... [T]he *Grain Processing* rule should be regarded as an application of the entire market value rule. ... The *Grain Processing* rule is simply a special case in applying the entire market value rule - the case where the invention provides none of that value. Therefore, this doctrinal issue should not cause confusion.").

[42] See John W. Schlicher, "Measuring Patent Damages by the Market Value of Inventions Given Available Noninfringing Substitute Technology – The *Grain Processing, Rite-Hite* and *Aro* Rules," 82 Journal of the Patent and Trademark Office Society 503 (2000)("The District Court awarded and the Court of Appeals affirmed an award based upon 'compensation not less than a reasonable royalty' of an amount approximating the entire difference between the manufacturing cost that the infringer would have incurred making the same quantity of the non-infringing substitute product, and the lower cost that it in fact incurred in making the infringing product. The courts did not award the patent owner only some part of the cost savings that the patented invention made available. Nor did either court appear to engage in any extensive consideration of how the patent owner in a license negotiation would have induced that particular infringer to pay a royalty equal to that entire cost savings, rather than some part of it. The courts appear simply to have awarded one hundred percent of those cost savings as the damage measure. In so doing, the courts awarded damages based upon the true economic value of that invention, rather than the part of that value that a patent owner might reasonably have expected to obtain by an actual license negotiation with this one infringer. This approach departs significantly from the usual course of awards based upon hypothetical royalty negotiations in which various experts typically testify and fact finders typically find that a royalty rate would have been equal to only to some part of the entire cost savings (or value additions) that the patented invention made available. This ultimate result again mirrors precisely the results of damage awards in countless damage decisions under the infringer's profit measure.").

answer, the courts are likely to conclude that it is not. Congress will have precluded the best response to the problem the amendments try to solve.

G. The Amendments Impose New Requirements on Judges in Patent Actions

The report says that juries are given little useful guidance in calculating a reasonable royalty particularly in how to apply the so-called *Georgia-Pacific* factors and the entire market value rule. I agree that the *Georgia-Pacific* factors provide little useful guidance in deciding reasonable royalty damages if simply read as a list.[43] They have little value without an explanation that patent damages should award the owner the economic value of the invention that it lost due to infringement (no more and no less) and how to determine the economic value of some bit of technology. In 1992, I attempted to provide that explanation, apparently with little effect.[44]

If, as the report says, juries are simply read the *Georgia-Pacific* factors and some version the entire market value rule, there is little reason to expect that reasonable royalty damage awards will usually approximate the economic value of patented inventions. If the courts are treating entire market value rule as a separate method of determining of reasonable royalty damages, as the amendments assume and perhaps some courts believe,[45] the same result is likely for reasons discussed earlier.

Mr. Rooklidge's paper provides an example of a jury instruction.[46] He describes two of the instructions given to the jury that awarded $1.52 billion against Microsoft in *Lucent v. Gateway*. Based on Mr. Rooklidge's description, the patents covering features of Microsoft's Windows Media Player that involved audio signal processing. Damages were apparently awarded starting

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[43] *Patent Law* § 13:146 ("As with the *Panduit* formula for proving lost profits, the District Court's list of factors in *Georgia-Pacific* has taken on surprising significance. Indeed, some courts described the law governing so-called "reasonable royalty" damages solely by reference to the *Georgia-Pacific* list. As I discussed in Chapter 9, the *Georgia-Pacific* list contains many facts useful in determining the economic value of some invention lost to a patent owner in a particular situation. However, the relationship between the *Georgia-Pacific* factors and the economic value of some invention is far from self-evident. Each of the factors requires further explanation to be useful. The list is also incomplete. For these reasons, the list does not translate into a systematic, easily-applied criterion for determining the economic value of an invention. This does not mean the *Georgia-Pacific* list should be ignored. However, this list should be taken simply for what the District Court said it was, namely, a list of some of the facts that other courts have noted as pertinent to determining a "reasonable royalty," and that should be considered to the extent that they are helpful in a particular situation. If the courts treat this list as the exclusive, mandatory, and complete statement of how "reasonable royalty" damages are to be determined, the law has failed to provide decision-makers with the best possible statement of this damage measure. The result is that patent owners and accused infringers are likely to have very different views about the amount of "reasonable royalty" damages in a particular situation, and decisions on the amount of "reasonable royalty" damages in a particular case are likely to vary over a wide range.").

[44] *Patent Law* §§ 9:28; 9:32 - 9:44.

[45] See section IV.B.

[46] See section II.

from the revenue computer companies received on sales of computers loaded with Media Player licensed from Microsoft.

The jury was instructed on the entire market value rule and the apportionment rule. The entire market value rule instruction, No. 62, apparently said: "An award on damages based on a percentage of sales of computer systems with a Windows operating system is permitted if Lucent proves . . . the specific features covered by the patent claims . . . were the basis for customer demand or that the patented features and the computer function together as a single unit." Mr. Rooklidge correctly points out that the "or" should have been "and." The instruction on "apportionment" was Instruction 60, saying "The portion of the profit that is due to the patented invention, as compared to the portion of the profit due to other factors, such as unpatented elements or unpatented processes, or features or improvements developed by Microsoft."

In my view, the jury was not usefully instructed on either the entire market value rule or the apportionment rule. Even if I agreed that "the basis for consumer demand" version of the entire market value rule was helpful, the instruction merely recited a five-word legal formula - were the features covered by the patent "the basis for customer demand." The instruction provides no explanation of what those words mean or how to go about applying this test to the facts, leaving lawyers free to argue almost anything. The apportionment instruction is a paraphrase one of the *Georgia-Pacific* factors, number 13 - "The portion of the realizable profit that should be credited to the invention as distinguished from non-patented elements, the manufacturing process, business risks, or significant features or improvements added by the infringer." This instruction tells the jury to consider the portion of the profit that is due to the patented invention as compared to the portion of the profit due to other factors. It leaves it to the jury to figure out how to do so and there are several options, many leading nowhere.

If Microsoft was charged with direct infringement and the jury was not told to compare the revenue Microsoft would have earned by licensing software including an infringing media player with the revenue Microsoft would have earned by licensing software including the next best media player or no media player, the jury was not informed how to decide apportionment. This is, of course, what *Georgia-Pacific* factor 9 says should be done. Factor 9 says consider "[t]he utility and advantages of the patent property over the old modes or devices, if any, that had been used for working out similar results." This is what the Supreme Court in *Dowagiac Mfg. Co. v. Minnesota Moline Plow Co.* said should be main consideration when it endorsed the concept of reasonable royalty damages in 1915.[47] The Court said a patent owner could prove the value of the invention and its damages by "by proving what would have been a reasonable royalty, considering the nature of the invention, its utility and advantages, and the extent of the use involved." This was the basis on which Congress placed this measure of damages in the Patent Act in 1922. After the same principle was included in the Patent Acts of 1946 and 1952, the Supreme Court said the same thing. In *Sinclair Ref Co. v. Jenkins Petroleum Proc. Co.*, the Court said "[t]he law will make the best appraisal that it can, summoning to its service whatever aids it can command", and added, "At times the only evidence available may be that supplied by testimony of experts as to the state of the art, the character of the improvement, and the probable

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[47] *Dowagiac Mfg. Co. v. Minnesota Moline Plow Co.*, 235 U.S. 641, 648 (1915).

increase of efficiency or saving of expense."[48]

In response to the problem with jury instructions and the other problems, the amendments impose several new responsibilities for judges in patent cases. The amendments require that judges, not juries, decide whether to use the entire market value rule, the established royalty rule, or the valuation calculation rule to determine reasonable royalty damages in a particular case. If the judge decides the established royalty rule applies, damages must be based on the terms of the license and not on the valuation calculation rule. If the judge decides that the valuation calculation rule applies, the judge must ensure in some fashion that a "reasonable royalty" is applied "only to the portion of the economic value of the infringing product properly attributable" to the invention. The judge must also "identify the factors that are relevant to the determination of a reasonable royalty, and court or jury, as the case may be, shall consider only those factors in making such determination."[49]

These requirements place added burdens on federal judges and the parties in patent cases. I would not expect this added effort to produce better damage awards. Since I do not believe the substance of the amendments help, I do not believe requiring judges to apply the substantive provisions will help. The only other thing the amendments require is that judges pick the "factors" relevant to reasonable royalty damages. Judges and juries will not make better decisions by requiring judges to select appropriate lists of factors. Factors are useless without a coherent theory of reasonable royalty damages that enables judges and juries to understand what they are trying to accomplish by an award and how to go about doing so. The amendments provide no coherent theory and provide judges with no guidance on how to go about determining damages in a more sensible way. The report simply recognizes the problem and the amendments command judges to do something about it.

Damages are an issue for juries to decide. I see no reason to change how patent trials have always been conducted or change the role of judges. Judges must assure that the evidence presented to juries has some value in reaching a correct result, the law is properly explained to a jury in a way that permits it to reach a rational result in a particular case, and the result a jury reaches is one a reasonable person could have reached given the evidence and the law. This is a difficult enough task. I would not add to it.

V. THE AMENDMENTS DO NOT PROVIDE FOR INCREASED DAMAGES IN APPROPRIATE SITUATIONS

[48] *Sinclair Ref Co. v. Jenkins Petroleum Proc. Co.*, 289 U.S. 689, 697-98 (1953).

[49] This feature of the amendments could have two different meanings. One is that a judge must determine the factors on which a reasonable royalty rate is to be determined. The other is that the judge must determine the factors on which reasonable royalty damages are determined. If the amendments are interpreted to have the first meaning, they require judges to engage in a wasteful and futile exercise, namely, separate the facts bearing on a proper royalty rate from the facts that bear on other aspects of reasonable royalty damages. If the amendments have the second meaning, the amendments require judges to limit the factors (and therefore the facts) on which the damage decision is based.

The Patent Act permits the court to increase damages up to three times the actual damages. The Act leaves it to the courts to identify the policy for increasing damages and apply that policy by some standard.[50] The amendments would add a general standard for increasing damages and a number of specific rules about how that standard must be applied. The report says the reasons for these changes are that damages have been increased in "inappropriate" cases and the need to decide the issue increases legal and litigation costs.

A. The General Willful Infringement Standard and the Specific Limitations

The amendments say a court may increase damages only if an infringer has "willfully infringed," one longstanding general judicial standard for increasing damages. This aspect of the amendments will have no effect on how the courts go about deciding whether to increase damages. If something is going wrong, this feature of the amendments will not fix it.

The amendments would change things by imposing specific limitations on when infringement may be found willful. The amendments would permit a court to find willfulness in only three situations: where infringement occurred after the infringer received a specific form of notice of infringement from the patent owner; the infringer "intentional copied the invention with knowledge that it was patented"; or after a first judgment of infringement, the infringer was again found to infringe based on conduct not "colorably different." The report provides no explanation of when a company has "intentional copied the invention with knowledge that it was patented." The amendments also preclude a finding of willfulness for activities during a period when the infringer had "an informed good faith belief" that the patent was invalid or not infringed and provide that "reasonable reliance on advice of counsel" would establish such a belief. The amendments preclude the patent owner from asserting willfulness until after a determination that the infringer was liable for infringement, and require a judge to find willfulness without a jury.

B. The Effects of the Amendments

Under these rules, all companies selling products not designed or made by "copying the invention" need not pay increased damages on sales occurring before a patent owner is able to learn of their infringing activities and send a notice describing with "particularity" how the product or its making or use infringes a claim of a patent. Even if a potential infringer knows of a patent that may relate to its activities, the company has no potential liability for increased damages until a patent owner learns of the infringer's products or processes and is able to send a notice describing in detail the basis for infringement. For many patents, damages will never be increased, because the patent owner will not be able to learn the details of a company's products or their manufacturing processes until litigation. Companies which infringe because they believe their infringement will go undetected are free of increased damages, if no notice arrives. Companies which infringe because they believe their infringement may be detected and the patent owner will be unable to learn enough about its product or process to prepare a proper notice are free of increased damages, if no notice arrives. Companies that infringe because they believe their infringement may be detected and that a patent owner will not sue for any of a variety of reasons (such as the cost and inherent risk of such an action), are free of increased

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[50] Some of the views expressed here on increased damages are also found in *Patent Book* §§ 9:53, 9:54; and 13:166 – 13:170.

damages absent a notice. In short, the amendments preclude increased damages from providing incentives for potential infringer to avoid infringement in some of the precise situations where the prospect of increased damages should do so.

Companies which did not "copy the invention" are free of increased damages until they receive a proper notice. If a proper notice arrives, increased damages for future sales becomes a risk and the company for the first time has an added incentive to obtain its lawyer's views about the patents in the notice. If its lawyers advise that the patents are invalid or not infringed, the company continues to operate free of liability for increased damages so long as the company reasonably relies on advice of counsel for its "an informed good faith belief" that the patent was invalid or not infringed. In short, companies which do not "copy the invention" may decide simply to ignore patents, because their potential liability for increased damages arises only after a notice arrives and their liability for increased damages may then be assessed and eliminated if its lawyers reach the right conclusions. The incentives increased damages provide for potential infringers to avoid infringement by addressing patent issues when they learn of a patent are seriously reduced.

C. The Proper Role of Increased Damages

The premise of these amendments is that damages in patent actions have been increased far more often than they should have been. Since the early 1980s, I believe that premise is correct. However, the amendments fail to address the real reason for that development. Instead of identifying and correcting the real problem, the amendments would impose a number of rules that go too far to insulate companies from increased damages.

The proper role and standards for increasing damages depends on what the law is attempting to accomplish. In my view, the only reason to increase damages is to increase the deterrent effect of damages, that is, to increase the incentives for companies to avoid infringement and decrease the frequency of infringement.[51] The law cares about the frequency of infringement, because more infringement leads to more costly litigation and more markets in which infringement is distorting the value of the invention to the patent owner and its licensees. Why will there by too much patent infringement without increased damages?

The Act defines so-called direct infringement as using or selling the invention. Strict liability exists for direct infringement. Liability for direct infringement does not depend on a person's intent, knowledge, or negligence. I have described the reasons elsewhere.[52] Given strict

[51] I recognize there are other possibilities. One alternative policy is to increase damages to induce potential infringers to acquire information about possible patent liability and act on that information to reduce the total amount spent by patent owners and product producers combined in learning and litigating about their respective rights and obligations. This approach seems less useful to me, because it does not explain why potential infringers will have too little incentive to acquire that information given the prospect of damage liability before any increase.

[52] *Patent Book* § 8:20. Unauthorized using or selling of the invention reduces the private value of the invention to the patent owner, whether that value is captured by others deliberately, knowingly, negligently, or mistakenly. Strict liability exists to induce efficient behavior by users and sellers, namely to capture none of the value of the invention. Under a negligence rule, users and sellers would be liable for the patent owner's losses only if they failed to meet some standard of care to avoid infringement. Negligence rules attempt to define a standard of care that triggers liability when the harm the conduct

liability, all unauthorized uses and sellers who capture some of the value of the invention are liable to the patent owner. Damages are not increased on some to compensate patent owners for gaps in infringement liability of others.

Infringement results in liability for an injunction and damages. Companies making and selling products have incentives to avoid or reduce the risks and costs of injunctions and damages for patent infringement. The risk of an injunction against future sales and the resulting losses will be the primary risk for many products. For some products, a producer's risk-avoidance incentives depend on its assessment of the likelihood of litigation and the amount of anticipated damages.

If a company is aware of a patent owned by another person that raises an infringement issue, a company that takes the law into account will begin or continue to sell some product or use some process without a license if the expected value from using the invention exceeds the sum of the expected cost of liability in an infringement action plus that company's litigation costs.[53] For companies which take the law seriously, the expected cost of an action from a potential infringer's perspective is its estimate of the probability that the patent owner will detect its activities and commence an action times its estimate of the probability of losing times the sum of the cost of an injunction and the cost of damages, plus its cost of litigation.

Given that set of incentives, why should damages be increased to provide additional disincentives to begin or continue selling some product or using some process? If damages are always at least as large as the additional profits an infringer expected to gain due to the infringement, there is no uncertainty about whether a particular patent was valid or was infringed by a particular activity, and there is no uncertainty about whether the patent owner would detect any infringing activity and pursue an action for infringement to its conclusion, potential infringers would have nothing to gain from infringement. There would seem to be no need for increased damages. An injunction and actual damages would be enough. However, these assumptions suggest three possible roles for increased damages.[54]

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causes exceeds the benefits obtained by failing to take available steps that would have avoided harm. A negligence rule permits a person to harm another person or his property where the benefits of the conduct obtained by not taking precautions to avoid the harm are greater than the costs of the harm caused by that conduct. The benefit to any person from using or selling the invention may never exceed the harm to the patent owner that conduct causes. The benefits from using the invention are the harm to the patent owner. Unauthorized use of the invention is never efficient.

[53] For this purpose, I ignore risk.

[54] There is a possible fourth category. Companies will view the patent rights of others in this way only if they care about the law and the rights of other. There may be companies that do not. Increased damages could increase their incentives to care. How does the law accurately identify such companies based on their behavior toward patents? The fact that a company makes no effort to find out about patents of others does not identify such companies because liability is generally strict and the law imposes no obligation to learn about patents. If a company learns of a patent that would, if read, plainly relate to its activities and decides simply to ignore the patent and take the risk of potential liability, damages could be increased to increase the incentives for that company to take the law and the legal rights of others into account.

Fill the Gaps in Damages Law. First, if damages are systematically smaller than an infringer's gains from infringement, there may be too much infringement, because the law of damages is inadequate. However, damages should not be increased to make up for some inadequacy in the way damages are measured. If damages law is inadequate, damages law should be corrected. While some decisions suggest such a role for increased damages, judicial decisions do not indicate that increased damages are being widely used to fill some perceived gap in the law of damages. If that is what the courts are doing, one would expect such awards to be based on consideration of the amount of damages awarded and some analysis of why the law failed in a particular case to shift the true gains from infringement to the patent owner. This is not generally what the courts do in deciding to increase damages.

Increased Damages Where There Was Uncertainty about Infringement Liability. Second, there is likely to be infringement (but not in my view too much), because there was uncertainty about whether a particular patent was valid or was infringed by a particular activity. As the report notes, there is often uncertainty about the scope or validity of patents that no amount of diligent effort by potential patent infringers will remove. The law and facts applied to decide many validity and infringement issues assure some level of uncertainty about how a court would decide those issues. This uncertainty means that, if the same law and facts were presented independently to ten different courts, those courts would reach different conclusions with some frequency. It is not wasteful to resolve this type of uncertainty by litigation. That is why the courts exist. Instead of fighting about the "right" view, the courts decide.

As mentioned earlier, if a law-abiding company is aware of a patent that raises an infringement issue, the company will begin or continue to sell some product without a license, if the expected value from using the invention exceeds the sum of the expected cost of liability in an infringement action plus that company's litigation costs. From a potential infringer's perspective, the expected cost of an action is its estimate of the probability that the patent owner will detect its activities and pursue an infringement action to judgment times its estimate of the probability of losing the action times the sum of the cost of an injunction and the cost of damages, plus its cost of litigation. If the potential infringer's estimate of the probability of losing is less than 100 percent (or a very high percentage that means the same thing), this means there is some uncertainty about the outcome.

If a particular infringer expects that there is, for example, a 40 to 60 percent probability that it would lose if sued, the infringer may decide to proceed on that basis. Should damages be increased to make up for this reduction in deterrence? In other words, should damages be increased where a potential infringer began or continued its activities because it made a judgment that the probability of losing was sufficiently low that the expected cost of the action to it is less than the additional value it would capture during the period of infringement?

If the law provides for increased damages in this situation, the law must identify some probability or range of probabilities of liability above which a potential infringer may not proceed. Should damages be increased if a potential infringer proceeds even though it believes there is a 30 percent probability of liability, a 50 percent probability, or a 70 percent probability? A particular potential infringer may decide to proceed based on the discounted damage liability in each of those situations. The prospect of increased damages could prevent the potential infringer from infringing by a corresponding upward adjustment. Damages could be increased so that the expected cost of litigation is equal the actual amount of damages.[55]

In my view, it would be a serious mistake to increase damages in any of these situations. The reason is that in each of these situations, the prospect of increased damages may discourage the introduction of many new products that would have been found not to infringe any valid claim, if the matter were litigated. If damages are increased in these situations, there would be too little selling of potentially infringing products and too much deterrence (namely, sales not undertaken due to the shadow of uncertain liability). The sale of a product is necessary to allow resolution of the legal uncertainty by the courts. If a sale of some product results in increased damages even though there is uncertainty about liability, there may be no sale. The lost value to consumers of the products not sold for this reason could be enormous.

There are situations where the probability of liability is sufficiently high that the likelihood that a court or jury will disagree comes close to zero. In those situations, there will be no over-deterrence. Increased damages will only deter sales of products that would be found to violate rights. Where the probability is below that level, damages should not be increased. If the law permits increased damages where the probability is lower, damages could be increased in virtually all patents cases decided by a trial.[56]

<u>Increased Damages Where a Potential Infringer Discounted Damages</u>. Third, there is likely to be too much infringement, because potential infringers may sometimes believe that their infringement will go undetected by the patent owner or that an enforcement action will not be commenced. Infringers are likely to discount their potential liability by the probability that the patent owner will detect the infringement, sue, and prosecute the action to conclusion. In my view, the prospect of an increased damage award is properly imposed to counteract these effects by increasing the expected damage award by an appropriate amount. In other words, damages should be increased, where an infringer's decision to sell some product in spite of a known

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[55] Since increased damages may not exceed three time actual damages, increased damages may make the needed upward adjustment only when the potential infringer's estimate of the probability of losing exceeds 33 percent. If the potential infringer's estimate of the probability of losing is lower, increased damages may not make up for the difference. I do not believe it is proper to infer from the limit of three times that Congress has decided that damages should be increased when the probability is greater than 33 percent and not increased when the probability is lower.

[56] About 85 to 90 percent of patent infringement actions are resolved by the settlement rather than trial. One important reason the parties to those actions are unable to resolve them by settlement is that they have different perceptions of the probability that they will win or lose, and the patent owner believes it has a higher probability of winning than the infringer believes it has probability of losing. These perceptions alter the expected value of the action to the patent owner and the expected cost of the action to the infringer, and make settlement more difficult. For a variety of reasons, it is more likely that parties will have different perceptions about the outcome when an objective evaluation would be that the patent owner has a probability of winning somewhere in the range 40 to 60 percent. Actions in which an objective evaluation is that the patent owner would have a much higher or much lower probability of winning are more likely to be resolved by settlement. This means that, for patent actions that reach trial and in which the patent owner wins, an honest and objective evaluation of the situation by a potential infringer may have been that there was a 40 to 60 percent chance of losing. For such actions, the cost of over-deterrence are likely to be very high.

patent was based its belief that its conduct would not be detected, or if detected, it would not be required to pay damages through litigation, because the patent owner could not afford litigation costs or was unlikely to view the value of damages to exceed litigation costs.

The difficult question is whether increased damages should be awarded when a company decided to sell for those reasons only when the actual probability of infringement liability was very high. In other words, should increased damages be confined to situations in which there is in fact virtually no possibility of over-deterrence loses, because damages will only be increased where infringement was virtually certain, even if that fact was not known to a particular infringer. On balance, my view is that the costs of over-deterrence are so large that that damages should only be increased where the probability of infringement was very high, and therefore the risk of over-deterrence very low.[57] Indeed, the law might go even further and impose increased damages only where damages for infringement are very large and the costs from too little deterrence correspondingly very large.

With this important qualification, an increase should be appropriate if there was direct proof that a company decided to infringe because it believed that its conduct would not be detected or no action would be brought.[58] In my view, if there are other circumstances from which one may confidently conclude that these must have been the reasons the infringer decided to proceed regardless of a known patent, an increase may also be useful and a court should have discretion to increase damages. Where a potential infringer took no steps to evaluate potential liability (that is simply ignored the patent and accepted whatever risks patent law imposed), it is difficult to draw any conclusion other than it was selling on the assumption that it would not be sued. Where a potential infringer evaluated potential liability (that is took the patent and the law in account) and sold even though it believed that there was a virtual certainty or extraordinarily high probability that it would lose an action, it is also be difficult to conclude anything other than it proceeded because it believed it would never face a judgment. The law should permit the court to increase damages in these two additional situations.

If this is the correct approach, damages should be increased when the actual probability of infringement liability was extremely high and an infringer who knew of the patent (1) began or continued its activities because it believed they would not be detected or remedied in court for

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[57] This is a modification of views I expressed previously and is prompted by considering a decision by the Court of Appeals in 2007. See *Patent Book* § 9:54 ("If this is the operative theory, damages should be increased in two situations - when an infringer knew of the patent, and either (1) knew that there was an extremely high probability that it would be found legal liable (that is, made some effort to evaluate potential liability, and decided to sell or continue to sell even though infringement litigation would be virtually certain to result in an adverse judgment), or (2) simply disregarded any legal and factual issues bearing on liability (that is, made no effort to evaluate liability or avoid infringement). Damages should be increased where a company decided to take the risk in these two settings. The reason for singling out those two cases is that they are the only ones in which it can be said that the decision to sell was based on an expectation that the conduct would not be detected, or if detected, would go unchallenged due to litigation costs. Of course, if there was direct proof that a company decided to infringe because it believed that the conduct would not be detected or challenged, an increase should also be appropriate.").

[58] This is what happened in a case decided in 1983 that lead to a change in the general standard for determining willful infringement. *Underwater Devices Inc. v. Morrison-Knudsen Co.*, 717 F.2d 1380 (Fed.Cir.1983).

the reasons that the patent owner could not afford the litigation costs or that the damages from litigation would not justify the owner's litigation costs,[59] or (2) simply disregarded any issues bearing on patent liability (that is, made no effort to evaluate liability or avoid infringement), or (3) believed that there was an extremely high probability that it would be found legal liable (that is, made some effort to evaluate potential liability and decided to sell or continue to sell even though infringement litigation would with virtually certainty result in an adverse judgment).[60]

D. The Three Judicial Approaches

The courts have had three views about when damages should be increased.

The approach that prevailed from the early 1800s until the early 1980s was to allow an increase where a company decided simply to disregard a known patent or decided to infringe even though it believed with virtual certainty that its activities violated valid rights. Damages were increased only for infringement that is willful and in wanton disregard of the rights of a patent owner, that is, for intentional infringement. The goal was to deter infringement by companies that disregarded patent rights or infringed even though they knew they are violating the rights. Damages were increased in those situations because the resulting litigation might have been avoided if the infringing company paid any attention to patents and litigation was a waste of effort when the ultimate result was clear at the outset.

Beginning in the early 1980s, the courts began to allow an increase, where a company took some steps to determine whether it was violating any rights and its steps were not deemed careful enough, because, for example, a lawyer was not consulted, the lawyer did not do a workman-like analysis, or the lawyer did not provide a proper opinion. The courts decided to use increased awards to cause companies to take a certain degree of care to avoid infringement. If they failed to exercise such care, damages were increased. The focus was on the process a company followed after it learned of a patent, and not merely on what it believed when it decided to sell. This approach was developed by the Court of Appeals for the Federal Circuit in the early 1980s.[61]

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[59] A person should not be liable for increased damages merely because it believed it would not be sued, because the patent owner knew it had no prospect of winning or the patent owner knew it had some probability of winning in the range of uncertainty and the discounted expected value of winning was less than litigation costs for that reason.

[60] Where an increase is appropriate, damages should be increased to a level that would make up for the amount that an infringer discounted the damage award based upon a less than certain probability that it would be discovered or sued. Suppose that the infringer assumes that there is a probability less than 1, call it p, that damages in the amount D will be awarded. A risk neutral potential infringer is likely to produce if its expected revenue exceeds its expected productions costs and the discounted expected damage remedy, p x D. Assume the expected payment of D would render infringement unprofitable, if it were certain to be imposed (that is p is 1.0). If p is less than 1.0, the remedy D may fail to deter infringement. In order to adjust for this effect, damages should be increased by the damage amount D divided by the infringer's estimate of the likelihood damages would by imposed, p, that is, D/p. Other approaches to increased damages do not provide a sensible basis for the amount for the increase.

[61] *Underwater Devices Inc. v. Morrison-Knudsen Co.*, 717 F.2d 1380, 1389-90 (Fed.Cir.1983)("Where ... a potential infringer has actual notice of another's patent rights, he has an affirmative duty to exercise due care to determine whether or not he is infringing. Such an affirmative duty includes, *inter alia,* the duty to

One important aspect of this standard was the perceived importance of advice of counsel. If the law required obtaining legal advice, and the courts reviewed whether a potential infringer obtained competent advice that provided the company with a reasonable basis for believing that it was not violating patent rights, damages are likely to be increased in too many situations. If the lawyers are willing to advise that there is no reasonable basis for liability only where there is no more than a 10 or 20 or 30 percent probability of liability, potential infringers face increased damages in actions where those probabilities were higher, including the 40 to 60 percent range. However, those are likely to be the actions in which litigation is necessary and serves a useful purpose. In order to make litigation possible, a company must sell a product. Damages should not be increased based on that sale. The absence of advice that there is no reasonable basis for liability should not mean damages are increased.

Under this approach, damages were increased with greater frequency than under the historical approach. Damages were increased when they would have been under the historical approach plus other situations where a company failed to base its decisions on a sufficient evaluation process.[62] The amendments adopt the basic willfulness standard under which this approach existed. By not changing the standard, the amendments fail to address this basic problem. Companies that receive a proper notice would continue to be subject to this approach.

In late 2007, the Court of Appeals for the Federal Circuit again changed the standards.[63] The court said an award of increased damages in patent actions requires a showing of willful infringement. The court said it was overruling its 1980s standard, because that standard was akin to negligence, and a willful violation of the law or the legal rights of others required reckless disregard of the law or the rights. The court said willful patent infringement is objectively reckless infringement that exists only where there was a "high likelihood" of infringement of a valid patent as viewed objectively and the infringer either knew of the objectively-defined risk or this risk was so obvious that the infringer should have been known of it.[64] The court also said that, because it was abandoning the affirmative duty of due care, there is no affirmative obligation to obtain an opinion of counsel.

The court's standard does not specifically address whether damages should be increased when there is proof an infringer knew of the patent and began or continued its activities because it believed they would not be detected or litigated to judgment. Presumably, such a person is not

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seek and obtain competent legal advice from counsel *before* the initiation of any possible infringing activity."(citations omitted)). At least one later decision said advice of counsel was not always necessary.

[62] *Patent Law* §§ 13:166 – 13:170.

[63] *In re Seagate Technology, LLC*, 497 F.3d 1360, 1370-71 (Fed. Cir. 2007)

[64] It is difficult to predict what the court regards as a "high likelihood" of infringement (30 percent, 50 percent, 70 percent, 90 percent?), how the court will decide when an infringer "should have known" of that likelihood (a standard that seems to permit increased damages even if a person in fact believed there was no infringement), and the facts the court will consider in objectively determining a "high likelihood" of infringement (and if it is the facts presented at trial, as the court suggests, what does this mean for a person who did not know or have access to those facts before litigation). Imposing increased damages on companies that "should have known" of a "high" risk raises the same issues and potential problems as the reasonable care approach.

responsible for increased damages if there is not an objectively high likelihood of infringement, even a likelihood the infringer does not know about because that question does not matter to its decision to proceed. If it turns out that there were real issues to be decided, presumably damages will not be increased. The same result will presumably follow for an infringer who did not care one iota about patents or patent rights and who luckily sold a product giving rise to issues of infringement or validity that justified decision through litigation. As for the company which decided to sell believing there was a 95 percent probability that it would be found legal liable, damages will not be increased if it turns out that company was objectively wrong and the probability was not that high.

The important issue is whether damages will be increased for companies which decided to sell believing there was a 30 or 40 or 50 or 60 or 70 or 80 percent probability that they would be found legal liable and whose beliefs were objectively sound. My assumption is that the Court of Appeals' "high likelihood" of infringement means a likelihood in the range of 95 to 99 percent and damages should not be increased. However, it is unclear whether a high likelihood of infringement means a virtual certainty of infringement.

VI. THE AMENDMENTS DO NOTHING ABOUT MANY OTHER DEFECTS IN THE LAW OF PATENT DAMAGES

There are many other problems in the law of patent damages. The amendments do nothing about them. If Congress is taking time to fix patent damages law, why not fix most of the problems? I have described those problems elsewhere.[65] I have no reliable way of quantifying which of those problems are most important, that is, are causing or permitting damage awards that diverge most widely from an economically sensible amount. However, these are some of the current defects in no particular order. I omit the problems discussed earlier. The amendment I describe in the following section is designed to correct most of these defects sometimes by language and sometimes by the explanation of what the language is intended to accomplish. Those more interested in action than reasons should skip this section and refer back to this section if the next does not adequately explain some change I suggest.

A. The Hypothetical Negotiation Approach to Reasonable Royalty Damages

The lower federal courts often define reasonable royalty damages as the amount the patent owner and the infringer would likely have agreed to in a hypothetical negotiation. This is not what the current Patent Act says and not what Congress intended when it amended the Act in 1922 and again in 1946 and 1952 to add language permitting this measure of damages. Measuring damages by the result of a hypothetical negotiation between the patent owner and the infringer has some aspects that lead to damages less than the economic value of inventions and other aspects that lead to damages greater than such value. The likely result of a hypothetical negotiation between the patent owner and the infringer should not be the test of "reasonable royalty" damages. It should be one consideration in those situations where it would have made economic sense for both parties to enter a license on some agreed payment terms.

B. Reliance on Historical Prices, Quantities, and Profits

[65] *Patent Law* §§ 13:133-13:165.

If reasonable royalty damages are to reflect the value of an invention when exploited in the absence of infringement, damages should be awarded based on the prices, quantities, revenue, and profit levels that would have prevailed had there been no infringement. If most efficient use of the invention would require use by others than the patent owner, damages should be awarded based on prices, quantities, revenue, and profit levels that would have prevailed if the most efficient users of the invention were operating under licenses at a royalty-revenue maximizing rate.

Today, reasonable royalty damages are determined without attempting to determine such a royalty-maximizing rate and without applying that rate to the revenue or quantity of sales the infringer would earned if operating under a license at that rate. The law makes adjustments such as these in determining lost profits. The law ignores that the same problems exist in determining reasonable royalty damages.

In the example described earlier, I eliminated this additional problem by specifying there was only one infringer, who supplied the quantity (125 units) that could be sold at the profit-maximizing price ($275) for a single supplier and earned net profits of $15,625. Assume instead that there were five infringers selling the same product and each had the same costs per unit ($150), including $15 per unit of "profit" representing a normal return on investment. Competition among them leads to the combined sales of 250 units and a price of $150 per unit. Each sold 50 units. Each earned revenue of $7500. Each would earn net profits of zero, ignoring the $15 per unit of "profit" representing a normal return on investment. To simplify the situation, assume the infringers had no alternative.

In a hypothetical negotiation in the absence of infringement, the patent owner will seek a royalty that would maximize licensing revenue. Licensing revenue will be maximized if the patent owner licensed at a rate equal to the rate of profit a single supplier would make when selling at the most profitable price and quantity. The profit maximizing royalty rate would be $125 per unit (or equivalently 45% of sales revenue), because at that royalty rate profits from sales will be maximized. Given that royalty obligation, licensees would view their costs as $275 per unit, and would sell at $275 per unit. Total unit sales by all licensees would be lower than the historical 250 units. Total sales would be 125 units, with each seller supplying 25 units. Each seller would have revenue of $6875. Combined infringer revenue would have been $34,375.

If damages are based on the profit maximizing rate of $125 per unit and the infringers' historical unit sales of 250 units, damages are $31,250. Damages are two times the economic value of the invention. If that rate is applied to the quantity each infringer would have sold as a licensee, 25 units, total damages against all infringers are $15,625, the true economic value of the invention absent infringement.[66]

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[66] By chance, if damages are based on the profit maximizing rate of 45 percent of revenue and the infringers' historical sales revenue of $37,500, total damages are $16,875. Damages are only a little over $1000 more than the value of the invention. This close approximation of a correct award is the result of total revenue under profit-maximizing licenses being about the same as total revenue with infringement. There is no reason that this will be true in all or even most situations.

If the reasonable royalty rate is based on each infringer's historical net profit rate of zero, damages are zero.

If the reasonable royalty rate is based on each infringer's historical net profit rate of $15 per unit (actually a mere normal return on investment), and historical unit sales of 50 units, each infringer is liable for $750 and total damages are $3,750 or about one fourth of the value of the invention.

C. Reliance on Patent Owner and Infringer Expectations

One feature of the hypothetical negotiation approach is that the negotiation is said to be based on the expectations of the parties at the time infringement began. A reasonable royalty may be based on those expectations, even though history has shown that the expected prices, quantities, and profits and the actual amounts were very different. This approach to determining damages is unnecessary and misleading given the availability of historical facts that may permit the necessary data to be obtained with greater accuracy.

D. Reliance only on the Patent Owner's and Infringer's Efficiency

Reasonable royalty damages are based upon the profits that a patent owner or a particular infringer earned or expected to earn. The courts do not determine reasonable royalty damages based on the profits that would have been earned by the most efficient potential licensee. If a particular infringer is less efficient than the patent owner, *Georgia-Pacific* implies and other decisions suggest that a reasonable royalty damages may be based upon the value of the invention when used by the patent owner. However, when the patent owner is not a seller, and the hypothetical negotiation approach is applied, the law has no mechanism to call for reasonable royalty damages based on the value the invention would have had if exploited most efficiently, that is by the companies best suited to make the best products at the lowest cost. If a particular infringer is less efficient than other actual or potential licensees, the infringer's anticipated and historical profits will undervalue the invention.

E. A Hypothetical Negotiation between the Patent Owner and One Infringer

Where the patent owner is not a seller and competition among other potential suppliers for licenses is ignored, the result of such a hypothetical initiation is likely to undervalue the invention. If the patent owner is not a seller, the law does not specify whether the patent owner is deemed to be able to negotiate a royalty for the full value of the invention or only for a part. The hypothetical negotiation is often treated as one between the patent owner and one infringer. Such a patent owner and the hypothetical licensee will likely negotiate a royalty somewhere between zero and the full value of the invention when used by the licensee, depending on factors having nothing to do with the inherent value of the invention such as each party's ability to wait through and finance a lengthy negotiation. In at least one decision, *Grain Processing,* the implicit assumption of the award was that the patent owner receives the invention's full value, not merely the part that was likely to result from a two-party negotiation. However, this feature of *Grain Processing* is commonly ignored.

F. A Hypothetical Negotiation at the Time Sales Began and after the Infringer Has Sunk Costs in Assets Specific to Use with the Invention

An infringer may have invested in specialized assets (such as R&D, a plant, manufacturing equipment, and marketing efforts that it may not use for other products) before the date of its first sale. The lower courts say the hypothetical negotiation must be viewed as taking place on the date infringement began. By the time of the infringer's first sale and first infringing act, the infringer may have invested in specialized assets that have no use other than with the invention. The patent owner may now hold up the infringer. The price for the license will be higher than it would have been if negotiated before those investments. The value of the invention should not be higher, because the law picks the date for a hypothetical negotiation after the infringer invested in these assets. Rather, the law should make clear the date of the negotiation is a date before the infringer invested in such specialized assets or otherwise make clear that the infringer's investments prior to the date of negotiation may not be disregarded.

G. The Effect and Cost of Patents Owned By Others

The value of a particular invention and patent may depend on or be enhanced by use of other inventions covered by patents owned by others. Many products employ several patented inventions. When the seller of such a products is found to have infringed one of those patents, and the infringing product also embodies other patented inventions, it becomes necessary to allocate damages among those patents. The report refers to this problem. The amendments say nothing about it. This issue arises whether the measure of damages is lost profits or a reasonable royalty.

Where it would be technically and economically possible to employ an invention of one patent owner without infringing a patent of another, the value of the independently useful invention may theoretically be determined. The value of products employing such an invention would be the value the products would have if no other patented inventions owned by others are used. Those profits may, of course, be different and less than the profits the patent owner or infringer actually earned, because the products they sold and costs of making them may be different if only the one invention were used.

If the owner of the patent on the independently useful invention would not license, the value of complementary inventions owned by others that require use of the invention of that patent may be zero. If the owner of that patent would license, the profits available from use of the complementary inventions is reduced by the cost of the license. It is important to recognize that the value of those complementary inventions is not inevitably zero, because the owner of the patent may enhance the value of its invention, and therefore the profits available from its use, by enabling use of its invention with those complements.

Where it would not be technically or economically possible to employ an invention of one patent owner without infringing some patent of another, and it is necessary to the employ the inventions of two patent owners to generate any profits, then the analysis must be somewhat different. In that situation, each patent owner is a potential licensee of the patent of the other. The value of each patent to its owner is zero absent a license. However, the value of each patent with licensing is positive, the combined value of the patents is measured at first approximation by profits available from products embodying the inventions of both patents. However, the division of profits between those two inventions is necessarily arbitrary and one can do no better than allocate an equal share of the profits to each invention. Since neither patent owner may profit without the cooperation of the other, one would expect that each owner would license the other at a rate approximating 50 percent of each potential licensee's value of licensing.

H. The Effect and Cost of Patents Owned By the Infringer and Used in Infringing Activities

The law says a reasonable royalty requires consideration of the amount that should be credited to the invention of the infringed patent compared to complementary inventions. In determining reasonable royalty damages, as well as damages based on an infringer's profits, the courts have had a difficult time deciding whether an infringer should pay an amount equal to the profits it could earn if it used the invention alone and without also using inventions that the infringer made (and perhaps patented), or whether an infringer should pay an amount equal to the profits the infringer earned using the invention with those improvements. An infringer's inventions may enhance the value of inventions made by other patent owners. Indeed, an infringer may have made a basic invention to which the infringed patent is a mere improvement.

The law sometimes says a reasonable royalty may not include the part of profits from the infringing activities that are attributable to "non-infringing" improvements made by an infringer and employed in those activities. It is somewhat difficult to understand what constitutes a "non-infringing" invention. Presumably it is an invention that could be used without also using that the invention that is the subject of the action.

For example, a "basic" invention that could be used alone presumably would be a non-infringing invention. Where an infringer has made a basic invention, and another inventor makes and patents an improvement, it would seem that the other inventor should recover only the value of its improvement, and not the value created by using that improvement with an infringer's basic invention. In other words, if the basic invention may be used alone as a technical and commercial matter, the value of the improvement invention is the addition to profits that the improvement makes possible.

It is also possible for different inventors to make improvements to some product that may be used separately of together. In that situation, the same logic would apply. If one inventor makes and patents an improvement to some product and another person uses that invention with a separate improvement made by that person, the owner of the patent should not necessarily capture the additional value that infringer's improvement made possible.

If the inventions of a patent owner and an infringer are technically or commercially indispensable to making any profits, the division of value between them is necessarily arbitrary.

I. The Standard and Burden of Proof for Determining Reasonable Royalty Damages

An important problem in reasonable royalty damages is what to do when there seems to be too little information to make an accurate judgment. In the late 1800s, the courts had difficulty deciding how to measure damages in actions where there was no established rate and the patent owner had no lost profits and the infringer had no profits or gains or those amounts had not been proved.[67] In 1895, the Supreme Court said, if there was no established fee and "no impairment

[67] *Patent Law* §§ 9:61 - 9:63.

of the plaintiff's market," there was no damage and the owner was entitled only to nominal damages.[68]

The theory of reasonable royalty damages was developed by the lower federal courts in response to this problem. One influential lower court decision observed that there were situations where "no market value existed and where no loss or impairment of sales can be definitely proved." In that situation, the decision said the law permitted the owner to show the "actual value" of what has been taken by inquiring into facts pertinent to that value, including expert opinions on the value of the property, and permitting an award of that amount as what were called "general damages." In 1915, the Supreme Court approved.[69] The Court said a patent owner could prove the value of the invention and its damages by "by proving what would have been a reasonable royalty, considering the nature of the invention, its utility and advantages, and the extent of the use involved." The Court noted that "such proof was more difficult to produce, but it was quite as admissible as that of an established royalty."

The Patent Act of 1922 incorporated the reasonable royalty concept by providing that, where damages or profits could not be proved with "reasonable certainty", the court could award "a reasonable sum as profits or general damages for the infringement" and permit "opinion or expert testimony" on the amount of either profits or general damages. The statutory language was revised in 1946 and again in 1952. The underlying concept remained the same – make the best possible estimate of the value of the invention based on the available information about the nature of the invention, its utility and advantages, and the extent of the use involved.[70]

The problem then is whether there is any minimum amount of information and minimally acceptable economic theory that must be presented and employed or whether any information and theory is enough. The law today may be understood to mean that the only limits are that damages may not be based only on speculation and guesses, grossly excessive, or based on a clear factual error. In my view, if patent owners fail to prove the data and the theory by which the economic value of an invention may be at least reasonably approximated, reasonable royalty damages should be zero, unless the infringer has failed to keep normal business records that would have permitted such proof, destroyed such records, or otherwise made it difficult or impossible for the patent owner to prove damages in that way.

There is another option the address the difficulty of proving reasonable royalty damages. I suggested it in 1992 and have not discussed it since then. The law could adjust the amount of the award based on the degree of uncertainty about its correctness. If a patent owner presented only evidence that met the minimum requirement for some award, and left the amount of the award

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[68] *Coupe v. Royer*, 155 U.S. 565, 583 (1895).

[69] *Dowagiac Mfg. Co. v. Minnesota Moline Plow Co.*, 235 U.S. 641, 648 (1915).

[70] In 1953, the Supreme Court in *Sinclair Ref Co. v. Jenkins Petroleum Proc. Co.*, 289 U.S. 689, 697-98 (1953) said "… the absence of market value does not mean that the offender shall go quit of liability altogether" and "[t]he law will make the best appraisal that it can, summoning to its service whatever aids it can command." The Court added, "At times the only evidence available may be that supplied by testimony of experts as to the state of the art, the character of the improvement, and the probable increase of efficiency or saving of expense."

highly uncertain, the actual award could be reduced to reflect this uncertainty.[71] In the early days of reasonable royalty damages, the lower courts often said damages measured in this way should be "conservative," meaning resolving all uncertainties in data and theory in a way that reduced the amount of the award. This is somewhat different way of achieving the same goal.

A related issue is which party has the burden of proving damages. Where proof is difficult, the assignment of the burden is more likely to influence the outcome. Those familiar with the history of the entire market value and apportionment problem know that the burden of proof has been a major part of problem. The Supreme Court in 1912 set down the rules for who must show what on at least apportionment.[72] The patent owner had the burden in the usual situation and there were some situations where the infringer had the burden. In 1915, the Court cast some doubt over this decision and seemed to say the patent owner always had the burden of proof on apportionment, unless the infringement was intentional.[73] The 1915 decision said the patent owner had the burden of proving reasonable royalty damages, including the features of that analysis that relate to the same problem.

I have read the views of some that the law today works the following way. The patent owner has the burden to prove that the entire market value rule applies. If the patent owner carries that burden, the apportionment issue is not considered. If the owner does not carry that burden, the infringer has burden of proving that apportionment applies. If the infringer does not carry that burden, damages are based on application of the entire market value rule. I have also read that the patent owner usually carries its burden of showing the entire market value rule applies.

If this is how the law works, this is cause for concern. Based on all the empirical and case studies I have read about inventing and the commercial significance of individual inventions (and the many patents I have seen), only a very small percentage of patents cover inventions that created the entire economic value of some product. Therefore, damages should be based on a patent owner's or an infringer's entire profits only in a very small percentage of cases. If for any reason the entire market value rule governs damages in a large percentage of patent actions, something may be going systematically wrong. If this is happening because it is difficult to prove the facts that would reveal the true economic value of some invention and the assignment of the burden of proof is leading in some way or another to this outcome, the way in which those burdens are assigned should be reconsidered.

J. Split Awards

Since the 1980's, the courts have said a patent owner is entitled to recover some amount of money on each unit an infringer sold. Where infringement lowered prices and increased quantities of products sold, split awards permit a patent owner to obtain more from the profits on the sales it makes plus the damage award than it would have made had there been no

[71] In other words, if it is not possible to identify some range within which the value of the invention is highly likely to fall, damages should be zero. If it is possible to identify some range within which the value of the invention is highly likely to fall and the range is very wide, damages should be on the low side. If the range is fairly narrow, damages should be somewhere near the middle.

[72] *Westinghouse Elec. & Mfg. Co. v. Wagner Elec. & Mfg. Co.*, 225 U.S. 604 (1912).

[73] *Dowagiac Mfg. Co. v. Minnesota Moline Plow Co.*, 235 U.S. 641 (1915).

infringement. In an extreme case, a patent owner might earn from the combination of profits it succeeded in making and damage awards against infringers, an amount equal to twice the profits it would have made in the absence of infringement. Permitting an award of lost profits for some of an infringer's sales during one time period and reasonable royalty damages on sales in a different time period is not a problem. The same is true of awards on lost profits on some products and reasonable royalty damages on others. However, if the law requires a recovery on each unit sold and permits split awards based on sales of the same product during the same time period, damages are too large in those situations where infringement reduced price and increased unit sales.

VII. AN ALTERNATIVE AMENDMENT TO SECTION 284 AND THE PURPOSES OF THE CHANGES IN THAT AMENDMENT

This list of problems in determining damages makes legislative solutions difficult without pages of new language. Therefore, my current view is that Congress should do nothing to the Patent Act on damages. However, the courts have not been particularly receptive to proposals for change and legislation may become necessary.

A. An Alternative Amendment

If legislation is necessary, I suggest amending Section 284 to read as shown below. These amendments address the problems that prompted the S. 1145 amendments and deal with some of the other problems.

> § 284. Damages
>
> Upon finding for the patentee the court shall award damages adequate to compensate the patentee for the profits the patentee lost as the result of the economic value of the patented invention in the infringing use by the infringer, but in no event shall damages be less than the reasonable economic value of the patented invention in the infringing use by the infringer, together with interest and costs as fixed by the court. The amount of reasonable royalty payments that would have been made by the infringer acting under a license granted by a patentee may be considered in determining the reasonable economic value of the patented invention in the infringing use, where it would have been in the economic interests of the patentee to grant such a license and the infringer to accept such a license on those payment terms. The patentee shall have the burden of proving damages by a preponderance of the evidence and the amount of damages shall be proved by reasonable approximation, unless such amount may not be reasonably approximated due to the infringer's failure to keep or maintain normal business records.
>
> When the damages are not found by a jury, the court shall assess them. In either event the court may increase the damages up to three times the amount found or assessed.

The court may receive expert testimony as an aid to the determination of damages.

This amendment would do several things.

B. Damages based on the Economic Value of the Invention

First, these amendments would require damages measured by the patent owner's profits lost as the result of the economic value of the patented invention in the infringing use or the reasonable economic value of the patented invention in an infringing use. Damages would be measured by a patent owner's lost profits as they are under existing law. Damages would also be measured by the reasonable economic value of the patented invention in the infringing use. This second measure of damages would play much the same general role as the existing "reasonable royalty" standard. As with existing law, this amended version provides that "in no event shall damages be less than the reasonable economic value of the patented invention ...." This language should mean only that the patent owner may recover the larger of its lost profits or the reasonable economic value, and not that damages may be larger than the reasonable economic value of the invention.

The definition of both measures of damages refers to the "economic value" of the patented invention, a concept alluded to in 284(c)(1)(C) of S. 1145. An equivalent term would be the "market value" of the patented invention. The purpose is to express the basic principle that patent damages should award patent owners the value of the patent rights that was lost to the owner due to infringement and that damages should measure the value of a patented invention based on sound economics.

Patent rights give a patent owner control over commercial use of the invention so that the value of the invention will be determined by the uses the owner chooses to make of it or permit others to make. Unauthorized use of the invention interferes with the owner's choices and prevents the invention from having the value it would have had if the patent owner controlled all uses. Damages should award a patent owner the difference between (1) the value an invention would have had to a patent owner, if there was no infringement by the defendant in a particular case or by anyone else, and the invention was used in the manner that would have been determined by the patent owner and the economic forces at work in the markets for products and patent rights, and (2) the value the invention had to the patent owner with infringement.

In this amendment, the term "patented invention" is used in place of "invention" in the existing section. This change is to make clear two concepts. One is that damages should be based on the economic value of the invention when exploited under the rights granted by a patent. An invention not protected by patent rights would have no economic value, if known to everyone. The invention has economic value to its owner due to the patent rights. The other is that damages should be based on the economic value of an invention in the commercial activities that the patent gives the patent owner the right to control. The rights are infringed only by commercial activities that use the "patented invention." See section 271(a) of the Patent Act. Commercial products and processes use a patented invention only if all of the elements and features of the invention as defined in a claim of a patent are used. A product or process that uses only some of those elements and features does not use the patented invention. The economic value of a patented invention must be only the value derived from the commercial products and processes that employ all elements and features of the invention, because patent rights are not infringed by someone whose activities take advantage of only some of the elements or features found in a claim.

C. Profits Lost as the Result of the Economic Value of the Invention in the Infringing Use

Second, this section provides "damages adequate to compensate the patentee for the profits the patentee lost as the result of the economic value of the patented invention in the infringing use by the infringer …."

In the absence of infringement by anyone, a patent owner may have attempted to maximize the economic value of the rights by commercially producing and selling products and earning profits from those activities. Infringement may have reduced those profits. When the owner sells products, the value of the invention to the owner is the difference between the profits it would have been able to earn if no one infringed the rights and the usually lower profits it did earn because other people used the invention in unauthorized ways. Therefore, this section provides "damages adequate to compensate the patentee for the profits the patentee lost as the result of … the infringing use by the infringer."

The section does not merely say that the patent owner receives the profits lost from the infringing use because the profits a patent owner would have been able to earn in the absence of infringement are not necessarily what the patent owner would have earned if an infringing company sold nothing. A patent gives its owner the right to prevent others from selling infringing products, not from selling any products. The profits of the patent owner that are attributable to the economic value of the invention and the patent rights are not measured by looking only at the effect of an infringer's sale of some infringing product on the patent owner's profits. The fact that some person sold an infringing product does not mean that the same person could not have sold a non-infringing product during the same time period. Therefore, this section provides that the patent owner's lost profits must also be "the result of the economic value of the patented invention" in the infringing use. The economic value of the invention in the infringing use is the difference between the profits or gains the infringer earned using that invention and the profits or gains the infringer would have earned using the next best alternative available to it.

The profits that a patent owner lost as a result of the infringer capturing that value is the difference the profits the patent owner lost as a result of the infringer's infringing sales and the profits the patent owner would have lost if the infringer has sold products using the next-best non-infringing alternative available to it during the same time. The difference is the amount of the lost profits that are the result of "the economic value of the patented invention in the infringing use by the infringer."[74]

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[74] The section does not say damages compensate the patentee for the profits the patentee lost as the result of the economic value of the patented invention in use by the patentee. A patent owner may recover lost profits on sales of products that do not use the patented invention. If a patent owner sells a product that does not employ an invention, another person sells an infringing product that does, and the infringing sale reduce the patent owner's profits, the patent owner may recover the loss. The value of patent rights to a patent owner depends on what they prevent others from doing, not on what they enable a patent owner to do. Similarly, the economic value of patent rights to the owner for the purpose of determining lost profits are not measured by the difference between the profit the owner could earn using the invention and the

This method of determining a patent owner's lost profits incorporates the issues previously decided under the so-called entire market value rule and the so-called apportionment rule. If the infringer had no alternative, damages are the patent owner's entire profits lost due to the infringing sales. If the infringer had a non-infringing alternative, damages are part of the patent owner's profits measured by the difference between the profits the patent owner lost as a result of the infringing sales and the profits the patent owner would have lost if the infringer has sold products using the next-best alternative. This method of determining lost profits replaces the existing entire market value and apportionment rules.

The next-best non-infringing alternative may have been a product or process that employed only some the elements and features of the invention as defined in a patent claim. Therefore, the form in which a patent claim is written should have no bearing on the amount of damages. If an inventor improves one part of a product having ten parts, damages will be the same whether the patent's claim refers to the improved part alone or the improved part and the other nine parts.

As under existing law, the amount of lost profits should be based on the quantity of sales and the prices that would have prevailed absent infringement, and not necessarily on historical prices and quantities. If prices would have been higher and quantities lower absent infringement, the amount of lost profit should be based on those higher prices and lower quantities. When the amount of a patent owner lost profits have been determined in that way, the quantity of patent owner sales on which lost profits are awarded may be smaller than the quantity an infringer sold. However, in this situation, a patent owner is not entitled to recover any additional amount on the number of units the infringer sold that exceed the unit sales of the patent owner on which lost profits are awarded.

D. The Reasonable Economic Value of the Invention in the Infringing Use

Third, the section provides that damages may also be "the reasonable economic value of the patented invention in the infringing use of that invention by the infringer." This alternative measure of damages exists to address a variety of situations in which a patent owner's lost profits does not provide an appropriate measure of damages.

One is when a patent owner does not make and sell products. Patent owners who make inventions and do not make and sell products have no lost profits on sales. In this situation, the value of the invention is the profits some other company gained from the infringing use, and not the profits the patent owner lost. Another is when a patent owner is capable of making and selling products, and yet is not able to do so as widely or efficiently as some other company. In those situations, the invention has greater economic value if used by the other company. Where such a company sells to customers to whom the patent owner could not have sold at any price, the patent owner has no lost profits from those sales. Where a more efficient company sells to customers to whom the patent owner could also have sold at some price, the patent owner may have lost profits. However, the profits the infringing company gained may be greater than those the patent owner lost.

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profits it could earn using the next best alternative available to it. The law seeks to enable patent owner to capture the largest possible profits that the owner could earn using any of the alternatives available to it, and precluding others if it wishes from using those alternative subject to the owner's patent rights.

In these situations, the patent owner may recover "the reasonable economic value of the patented invention in the infringing use of that invention by the infringer." One purpose of measuring damages in these situations in this way is to assure that patent rights have the same value when owned by people or entities that do not produce and sell products as the rights do when owned by companies that do produce and sell products. A related purpose is to assure that patent rights have the same value when owned by companies not able produce and sell products as widely or as efficiently as some other company as the rights do when owned by companies capable of widest and most efficient use.

In these situations, "the reasonable economic value of the patented invention in the infringing use of that invention by the infringer" is the best reasonable estimate of the economic value of the patented invention in the infringing use that is possible based on the facts that are helpful in determining that value, including the nature of the invention, the utility and advantages of the invention over others available during the period of infringement, and the extent of the infringement. In these situations, the utility and advantages of the invention are the profits or gains that the infringer made as a result of its infringing use of the patented invention. Again, as with damages based on lost profits, the mere fact that some company earned profits or achieved other gains using some invention does not mean that all those profits or gains are the result of the infringing use of the invention. In these situations, the section should be understood to require asking what is the difference between the profits or gains that the infringer earned using that invention and the profits or gains that person could have earned using the next best non-infringing alternatives available to it during the period of infringement. The section does not require consideration of any other particular facts or factors in determining the amount of reasonable economic value.

The reasonable economic value of the patented invention should be based on the economic and technological conditions that actually existed during the period of infringement. The economic value of the invention may change during the period of infringement as economic conditions and technological conditions change.[75] These changes should not be ignored in determining damages. Non-infringing alternatives that first became available to an infringer at any time during the period of infringement should be taken into account.[76] They should not be ignored because they did not exist on the date infringement began or on the date the invention was made or an application for a patent filed. The non-infringing alternatives that affect the value of some invention depend on those that actually existed, not on those the infringer or others might have developed.

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[75] Demand for certain products may go up or down. The supply of products may go up or down. New technological options may become available. New products may become available that make other products less valuable or more valuable.

[76] If an alternative became available to the infringer after infringement began and the infringer could as a practical matter have switched from selling the infringing product to selling the non-infringing one, the reasonable economic value of the invention after the date on which the infringer could have switched should be determined based on the profits and gains the infringer could have achieved using that alternative. Similarly, if a non-infringing alternative was available to an infringer at the time infringement began and for some reason, it became impractical for the infringer to use that alternative at some time during the period of infringement, this alternative should not be taken into account after that time.

Damages should be based on the actual economic value an invention during the period of infringement, not the economic value the patent owner or an infringer expected it would or might have in the future. The reasonable economic value should not be based on the views of the patent owner or the infringer on the date infringement began, when there is better evidence of the invention's actual value during the period of infringement. If an invention proves to have larger value than the patent owner or an infringer anticipated, damages should be based on the larger value. If the invention proves to have less value than anticipated, damages should be based on the lesser value.

The reasonable economic value of the invention should be based on the best information available about economic and technological conditions throughout the period of infringement. The value of the invention during this period should not be limited to information the patent owner or the infringer possessed on the date infringement began. When available, damages should be based on or derived from actual market results on price, revenue, cost, and profits, not on the patent owner's or the infringer's expected results on the date infringement began.

As with damages based on lost profits, damages based on the reasonable economic value of the invention should be based on the prices, quantities, costs, and profits that would have prevailed absent infringement. Where infringement reduced the actual economic value of the invention, damages should be based on the larger economic value the invention would have had absent infringement. For example, if sales of an infringing product occurred at lower prices and in larger quantities than would have maximized profits from use of the invention if use were controlled by the patent owner, damages based on the reasonable economic value of the invention should be based on the higher prices and lower quantities that would have been more profitable. This means that damages for the reasonable economic value may be based on higher prices, lower quantities, larger profits, and larger or smaller revenue than an infringer actually experienced. There is no reason the law should take such effects into account in awarding damages based on lost profits and ignore the same effects in basing damages on reasonable economic value. Damages should not depend on whether a patent owner is a seller with actual lost profits or a person who must exploit the rights in some other way and has no actual lost profits.

E. The Amount of Reasonable Royalty Payments

Fourth, in the two situations mentioned earlier, a patent owner may have increased the value of the rights to the invention by authorizing one or more of those companies to use the invention in the commercial production and sale of products and requiring them to make payments to the owner. Agreements of this type are called licenses and the payments called royalties. The amount of royalty payments would reflect to some extent the economic value of the invention when used by the licensed company.

When the owner had granted a license to some company and infringement by another company caused the licensed company to lose sales or to lose revenue, the amount of the payments that the patent owner lost as a result of the infringement is part of the patent owner's lost profits. Damages for lost profits include those amounts.

Where the patent owner would have increased the economic value of the rights by licensing an infringing company to use the invention in the commercial production and sale of products, such as might be the case in the two situations mentioned earlier, the section provides that

> "[t]he amount of reasonable royalty payments that would have been made by the infringer acting under a license granted by a patentee may be considered in determining the reasonable economic value of the patented invention in the infringing use, where it would have been in the economic interests of the patentee to grant such a license and the infringer to accept such a license on those payment terms."

Under this provision, where each party would have found a license agreement to be in its economic interests, the amount of reasonable royalty payments that would have been made by the infringer acting under a license granted by a patentee may be considered in determining the reasonable economic value of the invention. The purpose of considering the amount of reasonable royalty payments is to help evaluate the significance of technological and economic facts on the reasonable economic value of the invention – by considering the facts in the way a patent owner and an infringer would have viewed them if attempting to identify a price for a license authorizing the infringer to use the invention in the manner that it did. The amount of reasonable royalty payments depends on the royalty terms of a reasonable license and the payments the infringer would have made operating as a licensee under the license.

For the purpose of determining damages, the terms of a reasonable license are unlikely to be the terms the patent owner and the infringer would actually have agreed to if they had actually negotiated a license before the infringement began. For damages purposes, the royalty terms of a reasonable license are different from the terms of an actual license the patent owner and the infringer would likely have agree to at that time.

There are three important differences between the royalty terms of a reasonable license and the terms of an actual license the patent owner and the infringer would likely have agree to at that time.

First, the terms of a reasonable license should be based on the best information about the reasonable economic value during the period of infringement, not only on the information known to the patent owner or the infringer at the time infringement began. The purpose of considering the amount of reasonable royalty payments is not to limit the facts used to determine the reasonable economic value of the invention. The amount of such reasonable royalty payments should be based on actual economic results during the period of infringement, not expected results. The amount of reasonable royalty payments should be based on data about what occurred during that period, not on what the patent owner or the infringer thought would or might occur during that period. In actual license transactions authorizing use of an invention before infringement occurred, royalty terms are likely to reflect the uncertainty about future economic and technological conditions and the risk the patent owner and the licensee bear that the invention may prove to be more or less valuable than anticipated. Royalty terms in actual licenses will reflect that risk. Damages should not, because damages are based on information about what actually happened in the past, not what might happen in the future.

Second, the terms of a reasonable license should be based on the amount of the full economic value of the invention to the infringer, not the likely lower amount the patent owner likely would have able to negotiate in an actual transaction.

In an actual transaction, a patent owner and a potential licensee will enter a license only if each believes it will be economically better off with the agreement than without the agreement. This means a patent owner will grant a license only if the payments it expects to receive from a particular licensee on particular sales exceed what the patent owner could earn if it did not license. If the patent owner is incapable of selling products to the customers supplied by the infringer (and the infringer is the only potential supplier), the patent owner would license for any amount greater than zero. If a patent owner is capable of selling products to certain customers and licensing would permit the infringer to sell better products to those customers or to make the same products more cheaply, the patent owner would license if the payments exceed the profits on sales it would lose by licensing.

In an actual transaction, a potential licensee will accept a license only if the payments it expects to make are less than its profits made possible by the license. If the infringer has an alternative to the license, such as producing an alternative product not protected by the patent, the infringer would pay no more than the difference between the profits the infringer may earn from using the invention and the profits the infringer could have captured by producing and selling the next most profitable alternative non-infringing product. This difference is the full economic value of the invention when used by the infringer. In this respect, the way in which a potential licensee would view the value of the invention in an actual transaction and the way the reasonable economic value of the invention should be determined are the same. The utility and advantages of the invention are measured by this difference.

However, an actual transaction between the patent owner and the infringer is unlikely to result in royalty payments equal to the full economic value of the invention.

For example, assume the full economic value of the invention when used by the infringer is $10 per unit. Assume the patent owner is incapable of selling and is better off with payment greater than zero. In that situation, an actual transaction is likely to result in payments somewhere between $0 and $10 and highly unlikely to result in payments of $10. The same problem would arise if the patent owner would lose $5 of profits per unit by licensing. An actual transaction is likely to result in payments somewhere between $5 and $10 and again is highly unlikely to result in payments of $10. For the purpose of determining the terms of a reasonable license, this bargaining problem patent owners face in actual transactions should be ignored.

Third, the terms of a reasonable license must be based solely on the patent owner's and infringer's commercial options and not on their options to litigate an infringement claim. In an actual transaction, the patent owner and the infringer have an option to a license that is likely to result in royalty terms calling for payment less than the full economic value of the invention. The parties to an actual license negotiation will view their options as entering a license and avoiding infringement litigation or not entering a license and litigating infringement. In an actual transaction, the minimum payment the patent owner will accept is the lesser of the commercial value of the invention it will be able to capture if it does not license and the expected value of a patent infringement action against the infringer. If the expected value of the infringement action is less than the commercial value of the invention it will capture if it does not license, the patent owner will license for some amount greater than the litigation value. The patent owner will license for payments less than the economic value of the invention to it absent a license. In an actual transaction, the maximum payment the infringer will agree to make is the lesser of the additional profits it will make by using the invention if it does license and the expected cost of a patent infringement action against it if it does not. Again, if the expected cost of the infringement action is less than the economic value of the invention it will capture if it does license, the infringer will not agree to pay the patent owner the economic value of the invention – it will agree to pay only something less.

In order for the amount of reasonable royalty payments to be of any use in determining the reasonable economic value of the invention, the patent owner and infringer must be viewed as negotiating a license based solely on their economic options and not on their options to litigate an infringement claim. This means that none of the facts that bear on the patent owner's expected value of litigation and the infringer's expected cost may be considered. The patent owner does not consider its probability of winning an infringement action and the infringer does not consider its probability of losing. The patent owner does not consider the cost of infringement litigation avoided by licensing and the infringer does not consider the cost of infringement incurred by failing to license. Neither considers the risk of litigation – namely that a court or jury may disagree with their views about who will win and lose.

For those reasons, the royalty terms of a reasonable license (and the amount of reasonable royalty payments) are different from the terms of an actual license the patent owner and the infringer would likely have agree to on the date infringement began (and the amount of actual likely royalty payments). This approach to determining damages recognizes that, in the situations that give rise to the need for this alternative measure of damages, the only way that a patent owner could have captured the economic value of the invention created by the activities of an infringing company would have been by licensing that company, and that, if the patent owner and the infringing company had entered a license, the payments that would likely have been lower than the reasonable royalty payments the provision requires be identified. However, the amount of damages should not be limited to the amount of the payments the patent owner would have been able to obtain under an actual license.

Damages should be the amount of the full economic value of the invention, not the likely lower amount the patent owner likely would have received in an actual transaction.[77] Only in that way will the law provide the proper incentives for actual license transactions at the desired royalties. The amount of damages that would be awarded in infringement litigation between the patent owner and a company considering taking a license will influence actual royalty terms in the ways discussed briefly above.[78] If damages are measured by the amounts that would likely have occurred in actual transactions that avoided infringement and infringement litigation and those

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[77] Another way of expressing the same concept is that the reasonable economic value of the invention (the measure of damages) is not necessarily the same as the amount of reasonable royalty payments in a hypothetical transaction. The amount of reasonable royalty payments resulting from a hypothetical transaction is merely one fact the may be considered in those situations in estimating the reasonable economic value of the invention. For example, the reasonable economic value of the invention may exceed the amount of such reasonable royalty payments, where it is unlikely that a negotiation of such an agreement would have resulted in the licensed company agreeing to pay the full economic value of the invention to the patentee. The amount of the reasonable economic value of the invention should not be limited to the amount the patentee would likely have received as reasonable royalty payments where there is a sound reason to believe that such payments would have been less than the reasonable economic value of the invention.

[78] For a thorough discussion, see John W. Schlicher, The Economic Factors Governing Decisions to Settle Patent Litigation and License Patents, (2005, 2006 unpublished; available by request).

amounts are lower than full economic value for those reasons, the problems patent owners face that reduce royalty obligations to something less than full economic value will operate twice. The result of that error in measuring damages would be that the amounts of payments in actual transactions will be too low, there would be too little incentive to license, and there would be too much patent litigation.

For the same reasons, the amounts of royalties agreed to in prior actual licenses granted by the patent owner to other companies should not limit damages, even where the patent owner has granted a number of such licenses in situations that are in all respect pertinent to the economic value of the invention the same as those that exist in the situation of some infringing company. Those licenses were entered before litigation and are likely to require payment of something less than the full economic value of the invention. While the terms of those licenses may be considered to the extent they provide useful information about true economic value, the terms of those licenses should not be used to define the amount of reasonable royalty payments, unless there is no other information on which to make a better estimate of reasonable economic value.

There are two other important aspects of how the amount of reasonable royalty payments should be determined for purpose of damages.

As mentioned earlier, damages based on the reasonable economic value of the invention should be based on the prices, quantities, costs, and profits that would have prevailed absent infringement. In determine the amount of reasonable royalty payments, the terms of a reasonable license and the amount of payments that the infringer would have made operating under such a license should take into account that the manner in which royalties are calculated (that is as $X per unit or X% of sales revenue) and the amount of the royalty rate (that is as $10 per unit or $100 per unit) may affect the prices and quantities of the infringer's sales. The total amount of reasonable royalty payments should be based on the prices and quantities the infringer would have sold if operating under a reasonable license and not necessarily the prices and quantities of the infringer's actual sales.

As also mentioned earlier, the provision requires measuring damages by the reasonable economic value of the invention and that value is measured by the difference between the profits or gains that the infringer earned using that invention and the profits or gains that person could have earned using the next best non-infringing alternative available to it during the period of infringement, the utility and advantages of the invention. The amount of reasonable royalty payments must be consistent with determining reasonable economic value in that way. Because this approach incorporates the entire market value and apportionment issue, those rules should play no separate role.

In particular, the amount of reasonable royalty payments should be based on the best possible measure of the economic value of the invention, and not on rules specifying the base for determining payments (that is total sales revenue or some part of total revenue) and the royalty rate to be applied to that base. The manner in which the base and the rate would likely have been specified in an actual transaction may be helpful in determining the reasonable economic value of the invention, since the patent owner and the infringer would likely have attempted to use some formula that had some relation to the invention's value. However, the manner in which royalty payments are specified in actual transactions may be based on considerations unimportant to damages, such as the need to specify a base on which payment obligations may be easily calculated by the licensee and monitored by the patent owner for possible cheating, the need to select a base that automatically adjusts for inflation, and the need for a base that reduces risk by adjusting for changes in demand and cost conditions. None of these considerations have relevance to damages which always look to the past.

Finally, where either party would not have found such an agreement to be in its economic interests on certain payment terms, the amount reasonable royalty payments should have no bearing on the amount of damages, because there would have been no agreement and no payments. For example, this might occur because the patent owner would have found it more profitable to make and sell products itself or through some other company than the infringer. In that situation, "the reasonable economic value of the patented invention in the infringing use of that invention by the infringer" is determined under the general criteria, that is, by making the best reasonable estimate of the economic value of the patented invention in the infringing use possible from considering the facts that are helpful in determining that value, including the nature of the invention, the utility and advantages of the invention over others available during the period of infringement, and the extent of the infringement.

F. The Reasonable Economic Value of the Invention in More Valuable Use By Another

Fifth, in situations where the patent owner would not have found it to be in its interest to license a particular infringer, the reason is likely to be that the patent owner had a more profitable way of exploiting the economic value of the invention. The economic value of the invention may have been greater when used by the owner or some other company than the infringer. In that situation, the law must decide whether damages should approximate the economic value of the invention when used by the infringer or the likely larger economic value when used by the owner or some other company. If the law wishes to create proper incentives for licensing and proper incentives for potential patent infringers to avoid infringing, damages should be based on the economic value the invention would have had when used by the most profitable efficient user.

This means that the value of the invention when used by such an infringer should not be based on the value of that infringer's use. If the amendment also addressed this issue, it would read as follows:

> § 284. Damages
>
> Upon finding for the patentee the court shall award damages adequate to compensate the patentee for the profits the patentee lost as the result of the economic value of the patented invention in the infringing use by the infringer, but in no event shall damages be less than the larger of the reasonable economic value of the patented invention in the infringing use by the infringer or in the use by the patentee or some other person that would have been made in the absence of infringement by the infringer, together with interest and costs as fixed by the court.

This language requires this result by providing that damages should be "the larger of the reasonable economic value of the patented invention in the infringing use of that invention by the infringer or the reasonable economic value of the patented invention in the use of invention by some other person that would have been made in the absence of infringement by the infringer."

G. Standard and Burden of Proof

Seventh, the section provides that patent owner has the burden of proving damages by a preponderance of the evidence. A court may place some burden on an infringer to present evidence to raise an issue on some matter involving facts uniquely in the infringer's possession or control. However, the ultimate burden of proof on all issues pertinent to damages should rest on the patent owner. In particular, this section places to burden on the patent owner to prove the amount of the profit differences described earlier. This burden is placed on the patent owner so that, when the amount of that profit difference is not shown, the result is that damages are denied rather than that damages are based on an assumption that the patent owner's entire lost profits or the infringer's entire profits are attributable to the patented invention. The section is based on the empirical judgment that very few patents relate to inventions that provide some product with its entire value, Therefore, when the amount of damages is difficult to prove, the difficulty should result in little or no damages rather than damages that would be appropriate assuming the invention provides someone its entire profits.

The amount of damages must be proved by reasonable approximation, unless the amount may not be reasonably approximated due to the infringer's failure to keep or maintain normal business records. Damages may be based on "reasonable economic value of the invention" where the infringing use may have resulted in lost profits for the patent owner and the owner is unable to prove that the infringement caused the loss and prove the amount of the loss by reasonable approximation. Where damages are based on the "reasonable economic value of the invention," it may be difficult to determine all the facts pertinent to the true economic value and to assess with precision the implications of those facts for the true economic value. Where it is difficult to determine the proper amount of damages, there is no reason to prefer the patent owner to the infringer in making an award. While the section permits an award that is a reasonable approximation of damages, damage awards should be determined in a manner that is highly unlikely to result in damages greater than what the true economic value of the invention would be if all the necessarily information had been available and the significance of that information on economic value clearly and reliably understood. Damages should be only part of true economic value to reflect the uncertainty in determining that value.

H. Increased Damages

I understand Senator Leahy proposed in March 2008 to replace the provision of the amendments with some language from the Court of Appeals' 2007 decision. While the Court of Appeals' decision is a step in the right direction, I would not amend the Patent Act to include language from this decision, because it is unclear what the Court of Appeals' new approach will mean and unclear, at least to me, whether this approach goes far enough to confine increased damages to cases of knowing and deliberate disregard of the law and the legal rights of others or knowing and deliberate infringement undertaken with the belief the infringement would not be detected or an action not commenced.

I have not included an alternative amendment on increased damages. If I had proposed a change, it would read

> "In either event the court may increase the damages up to three times the amount found or assessed in cases where the infringer knowingly and deliberately disregarded patent rights of others or

> knowingly and deliberately infringed a valid patent."

This standard would seek to confine increased damages to intentional disregard of patent law and patent rights generally or intentional infringement, that is, deliberate violation of rights granted by a patent known to valid and infringed. This standard would not permit increased damages based on reckless or negligent infringement. Under this standard, damages would not be increased where an infringer acted in view of some uncertainty about liability and the likelihood of liability was sufficiently large that infringer should in some sense have avoided the conduct ultimately found to be infringement.

I. Infringer's Profits or Gains

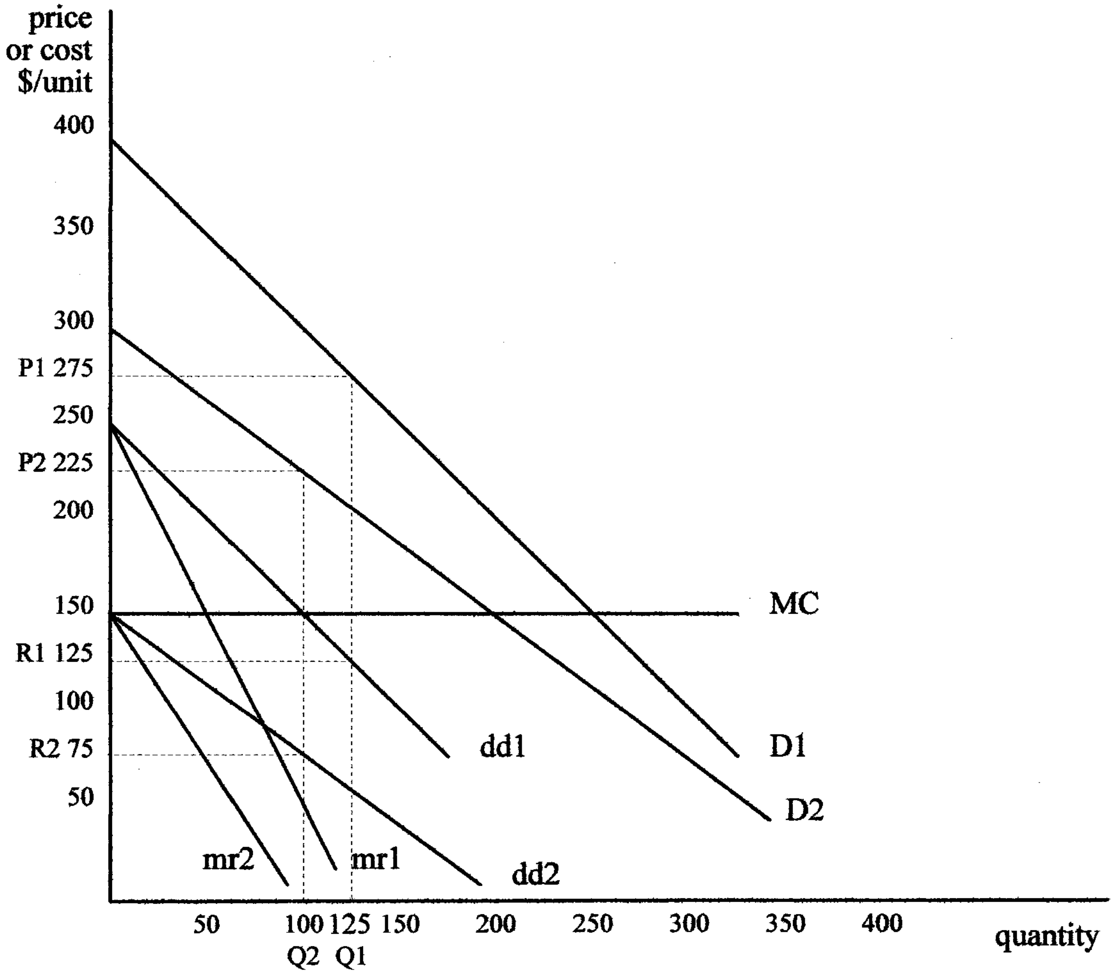
Finally, I would restore an infringer's profits and gains attributable to the infringement as one possible measure of damages. The law has accepted the view that it is not too difficult to determine a patent owner's lost profits and to determine the part of those profits that are the economic value of some patented invention. If this view is correct, the law should also be able to measure damages by an infringer's profits and base the award on the part of those profits that reflect the value of some invention. Where the infringer is able to use the invention to earn greater profits than the patent owner, there is every reason why the patent owner should be able to recover the larger amount. Only in this way will the patent owner and this company have the proper incentives to avoid the whole problem of infringement liability by entering a license calling for payments in a sensible amount. This change would also permit determining damages in a more straightforward manner. It would eliminate the many complexities and errors introduced by attempting to determine the amount of reasonable royalties by a fictional hypothetical negotiation or in other ways. Since this idea has not been the subject of much, if any public discussion, I have not included in the amendments described above. If this section included reinstating an infringer's profits, the first sentence would read in pertinent part:

> Upon finding for the patentee the court shall award damages adequate to compensate the patentee for the profits the patentee lost that are the result of the infringing use of the patented invention by the infringer and the economic value of the patented invention in that use or the profits or cost savings that an infringer gained that are the result of the economic value of the patented invention in the infringing use....

Notice that this change would be quite similar to section 284(c)(1)(C) of S. 1145:

> Upon a determination by the court that the showings required under subsections (A) and (B) have not been made, the court shall conduct an analysis to ensure that a reasonable royalty is applied only to the portion of economic value of the infringing product or process properly attributable to the claimed invention's specific contribution over the prior art.

Appendix A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