COMMENTS ON PATENT DAMAGES, INJUNCTIONS, RECENT SUPREME COURT PATENT DECISIONS, AND OTHER ISSUES IDENTIFIED IN THE NOTICE OF HEARINGS ON THE INTELLECTUAL PROPERTY MARKETPLACE

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I. Summary

I offer these comments in response to the FTC's notice. I comment on the subjects of patent damages, injunctions, two Supreme Court decisions, the effects of uncertainty, and "transparency" though I am not sure what that means.

A. Four General Comments

First, the notice asks whether patent owners are being systematically over-compensated or under-compensated. The notice identifies the harm of over-compensation being that "supra-competitive prices for technology would unduly dampen future innovation and prices for products incorporating patented inventions would increase unjustifiably." I do not know what is a "supra-competitive price" for a patented invention or an "unjustifiably high" price for a patented product. Patent law leaves the prices of patented products to the market. High prices for patented products are a sign the patent system is working, not a cause for concern.

Second, the goal of patent law is not simply to provide patent owners with "compensation" for use of their inventions. If "compensation" were the goal of patent law, the Patent Act would provide that anyone may use a patented invention subject only to liability for damages providing compensation. Patent law does not do that. The Patent Act provides for injunctions to prevent violations of the rights and damages to compensate for infringement. The reason for exclusive rights and injunctions is to enable a patent owner to control who uses an invention and how they use it and to require anyone who wishes to use an invention to buy the right to do so at prices and on other terns the patent owner and the user agree are mutually advantageous. One benefit of that approach is that the value of inventions is determined by market transactions, not by damages rules and judicial determinations of value.

Third, the notice asks about the extent to which available remedies influence agreements to settle patent infringement actions and license patents. The patent system relies on agreements between patent owners and producers to determine how inventions are used and the value that patent owners capture from commercial uses of their inventions. Those contracts and agreements are a far more efficient (that is better and less expensive) mechanism for the decision of patent issues and the transfer of revenue from producers to patent owners than administrative or judicial proceedings by the government. For this reason, an important test, if not the most important test, for determining the desirability of a particular legal rule is the extent to which it facilitates or interferes with agreements between patent owners and producers involving use of patented inventions. There are many legal rules that interfere unnecessarily with those agreements between patent owners and producers. These are the rules the government should change. The Patent Reform Acts ignore them.

Fourth, this is not the best time to legislate changes to patent law. The costs of patents are always in the present. The benefits of patent rights are in the future and for many important inventions in the far distant future. Under normal economic conditions, there is a tendency for people in elective office to be more concerned about the effects of law in the next one to three years than in later years. Under current conditions, that tendency is even more pronounced. For that reason, the government should be approach legislative changes to patent law with great caution.

B. Permanent Injunctions

The notice mentions the Supreme Court's decision *eBay* and asks for comments about when it makes economic sense for a court to issue a permanent injunction and what a court should do when it does not make sense. The *eBay* decision has caused confusion about how judges are to decide whether to issue permanent injunctions, particularly in cases involving a patent owner which exploits an invention entirely or in part by licensing. For such a patent owner, the question is whether an injunction should issue even though it would be in the economic interests of the patent owner to license an infringer. *eBay* did not decide that issue. Subject to a special class of situations, the answer is that a patent owner's willingness to license some infringer is not a reason to deny an injunction. It is the reason to grant an injunction.

eBay means that the courts must apply the principles of equity in determining whether to grant an injunction and may not apply a general rule that an injunction should issue if the patent owner prevails. Unfortunately, the Court simply referred the lower courts to the traditional four-part test for deciding whether to grant patent injunctions. When applied to patent actions, the traditional test is too vague to provide sensible guidance. The test focuses primarily on the effect of an injunction on how one existing invention will be used in the future and the effects of that use on the parties and the public. Such a test is inappropriate to a well-functioning patent system. The decision to grant or deny an injunction for one patent in one action will affect the future expected value of patents to other inventors of other inventions. The traditional test may easily be read to make this vital consideration irrelevant.

The traditional test also assumes that future use of the invention will be controlled by the injunction. However, a patent owner may waive its rights by granting a license, even after an injunction issues. The patent system is designed so that decisions by patent owner and users of inventions govern by whom and how inventions are used and at what prices. Only injunctions provide those people with the right incentives to make those decisions. The patent system is not designed to require judges to make those decisions. If judges think they have that responsibly (as the traditional test may be understood to imply), judges become the government regulators of patent licensing, selecting what companies use inventions, how inventions are used, and the prices for use. The choice between private control of licensing and judicial control should be easy. As Judge Easterbrook once observed,

> "A private outcome of these negotiations [between a patent owner and an infringer after an injunction issues] - whether they end in a license at a particular royalty or in the exclusion of an infringer from the market - is much preferable to a judicial guesstimate about what a royalty should be. The actual market beats judicial attempts to mimic the market every time, making injunctions the normal and preferred remedy."

The law should be that an injunction is the preferred remedy against patent infringement. There are five reasons. I mentioned one, to enable inventions to be used in ways and at prices that reflect private decisions and market transactions. The others are that injunctions provide patent owners with control over use of inventions (so that inventions have greater value than they

otherwise would), reduce the resources wasted due to infringement, reduce litigation costs, and limit the effect of deficiencies in current damages law.

While each reason is important, the reason listed last could be the most significant. If injunctions are denied, the value of a patent depends entirely on whether the law of damages permits patent owners to capture amounts equal to the economic value of their inventions. If injunctions are denied, the ability and incentives of patent owners and invention users to do business in patent rights depends entirely on the law of damages. The law of damages does not consistently and predictably result in awards equal to the economic value of inventions. Hence, denying injunctions undermines the desired effects of patent rights by increasing the importance of damages. If damages fail, the system fails.

This is one example. It is likely that the most frequently used measure of damages is the hypothetical negotiation approach. Damages are measured by what a patent owner and an infringer would likely have agreed on in a hypothetical negotiation for a license. It is implicit in this approach that the infringer will not be able to use the invention without first reaching agreement with the patent owner due to injunctive relief. Since the infringer in the hypothetical negotiation may not use the invention without an agreement, it will pay up to the economic value of the invention for a license. However, if the law is that injunctions will not issue in some category of situations, the hypothetical negotiation measure of damages is impossible to apply. In that category of situations, since the infringer may use the invention without an agreement, it will pay for a license up to the amount of the damages award.

What is the amount of the damages award? It is the amount likely to be agreed on in a hypothetical negotiation. However, the hypothetical negotiation cannot produce an agreed amount unless the amount of damages is determined in some other way. Under this state of affairs, damages may not be determined without knowing the result of a hypothetical negotiation and the result of a hypothetical negotiation may not be determined without knowing damages. Under this state of affairs, patent owners and producers will have no idea what to do. The amount of damages will be almost completely random. As a result, in the categories of situations where injunctions are denied, licensing will become virtually impossible. There will be no way to agree on a price because there will be no way to determine the amount of likely damages if there is no agreement. Over time, patents in those situations could easily come to have only a small fraction of their previous value because the remedies for patent infringement will have almost completely failed.

The difficult issue is whether an injunction should be denied where it is clear that it is in the patent owner's interest to grant the infringer a license and in the infringer's interest to operate under a license and there is good reason to believe an injunction would distort the amount of the royalty in an undesirable way. The potential distortion is that an injunction would permit a patent owner to negotiate a higher royalty due to an infringer's product-specific investments and this would adversely impact the incentives of patent owners and producers in the future. I do not believe there is an easy answer to this problem. At present, I suggest the following rule.

An injunction should be granted unless: (1) it is without doubt in the patent owner's business interest to grant the infringer a license and in the infringer's interest to accept a license at a payment rate equal the economic value of the invention when used by the infringer and there

is no way the patent owner could make more money if it or someone else used the invention and the infringer did not; (2) the infringer made large investments because it was necessary to do so to produce any product and not merely to produce the patented product, those investments are so large that they must be recovered (with an adequate return on investment) from sales revenue over a significant period of time, and those investments are large relative to the value of the patented invention; (3) it is clear that the payments made to the patent owner during the period no injunction is in place will be equal to the full economic value of the invention at the time of sales (and not based on the damages award rate); (4) there is no evidence or reason to believe the infringer made the investments to prevent an injunction; and (5) the period of denial is no longer than absolutely necessary. The same general approach could apply to the related problem of products subject to large demand side scale economies.

C. Damages

Damages are an issue due to the patent reform bills in the Congress. In my view, the proposed legislation on damages in the Patent Reform Act is undesirable. The Patent Reform Act proposal is based on the view that damage awards are too high, when based on compensation not less than a reasonable royalty. While there are occasionally cases in which it seems plain that the damage awards are larger than the economic value of some invention, it is not possible say that is happening in a significant percentage of cases. That said, much of the law on patent damages obscures the effort to match damage awards to the economic values of inventions.

Much of the law governing compensation not less than a reasonable royalty is almost useless in arriving at an award in a particular case that approximates the true economic value of an invention that a patent infringer captured or the patent owner lost as a consequence of the infringement. I describe those problems and the answers later. The proposal in the Patent Reform Act would not improve those legal standards. Those proposed changes would in some ways lead to awards that are too high and in other ways to awards that are too low. In all cases, the changes would lead to enormous uncertainty that would take years and probably decades to resolve.

Most importantly, the damage proposal in that version of the Patent Reform Act would prevent the adoption of a standard for determining damages in that way that would result in awards approximating the economic value of some invention. The proper way to determine that value is known and courts could easily correct the problem. With some refinements, 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 obscure its significance. This approach has been applied by the courts in many cases and all that is needed is for the courts to require its use in all cases in place of the present amorphous approach. Congress should not act until the courts have shown an unwillingness to do so.

D. The Supreme Court - *Medimmune v. Genentech* and *Quanta v. LG*

The Supreme Court has rendered two decisions in recent years that directly affect the value of patents.[1] The ultimate effects of the first of those decisions, *Medimmune v. Genentech*, are unclear because the reach of that decision is unclear.

The *Medimmune* decision may simply mean that a patent licensee may commence a declaratory judgment action seeking judgment that the patent is invalid where a patent owner grants a license that by its terms calls for royalty payments on products that are covered by a "valid claim" of the licensed patent, this contract provision means that validity is a condition to the payment obligation, the licensee has informed the patent owner that it is protesting payment of royalties because it believes a claim is invalid, and the licensee has a reason to believe that, if it ceased royalty payments, the patent owner would terminate the license and sue for infringement.[2]

If *Medimmune* is confined to that particular situation, the value of many patents previously licensed under this definition of royalty bearing products will decline. There is no particular reason for the federal government to intervene on their behalf at this point, since they elected to use that royalty provision. If *Medimmune* is confined to that situation, patent owners may avoid the problem in the future by licensing under different terms.

Without prejudging the matter, there is a significant risk that *Medimmune* will be found, incorrectly, to apply to all licenses. If that happens or even if patent owners believe it will happen and other contract terms to prevent or deter validity litigation fail, patents will be licensed only in situations where a patent owner has no option other than licensing or a patent is highly likely to be found valid by a court. If that happens, the number of licensing transactions will decline, the revenue that patent owners earn under licenses will decline, and costs of litigation between patent owners, licensees, and infringers will increase, reducing the ultimate returns to inventing.

The Supreme Court decision's is simply the latest in a rather sad saga that began in 1969. I believe legislation should be introduced to deal with the legal rules that constrain the ability of patent owners and their licensees to agree to and enforce terms regarding royalty payments and the litigation regarding the validity of patents that would reduce uncertainty about whether licensees will pay those royalties and reduce the litigation costs that the parties must bear under licenses.

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[1] I have commented on *KSR* elsewhere. John W. Schlicher, *Patent Law: Legal and Economic Principles*, West Group (1992, Second Edition 2003), Chapter 5, § 5:42. Properly understood, *KSR* is a desirable change in the law.

[2] The Court did not allow a patent licensee to challenge validity, because the harm of paying royalties on an invalid patent generated a substantial controversy. The Court's decision was more limited, expressed no such view, and was based on no such conclusion.

The Supreme Court's other decision is *Quanta v. LG*. The Supreme Court did not affirm the exhaustion doctrine. The Court changed the exhaustion doctrine and the relationship between the exhaustion doctrine and implied license doctrine. The Supreme Court did not find that exhaustion applied where a patent license purported to limit the rights transferred to purchasers of a patented product. The Supreme Court found that exhaustion applied in that case because the provision of the license that said something about the rights of a purchaser also said that the provision did not operate to limit the operation of the exhaustion doctrine. The Court reached its decision on exhaustion because the agreement expressly said that the parties did not intend to limit the exhaustion doctrine.

One novel and unfortunate feature of this decision is that the Court found that exhaustion applied to the sale of certain unpatented products and therefore effectively eliminated the implied licensed doctrine. Another novel and unfortunate feature of this decision is the Court's pronouncement that all post-sale restrictions were invalid. If the Court's decision is deemed to apply to situations other than that in the case before it and the Court's statement that all post-sale restrictions are invalid is taken literally, patent owners will capture a much smaller part of the value of their inventions, there will be less licensing, and there will be less use of patented inventions as methods of selling and licensing that previously increased use of those inventions are no longer used.

E. Uncertainty

Uncertainty regarding the validity and scope of patents has a significant effect on patent transactions. Unnecessary uncertainty of the substantive law of patents undoubtedly reduces the value of patented inventions and increases the cost of products and services not introduced due to this uncertainty. To the extent the substantive law could be change in ways that would reduce uncertainty without diminishing proper incentives to make inventions, the substantive law should be changed.

The Patent Reform Act will not reduce overall uncertainty; it will increase uncertainty. The principle claim of the patent reformers is that the Patent Reform Act will reduce uncertainty by awarding a patent to the first inventor to file a patent application rather than the first inventor to make an invention. Even if the claim is correct and the change has no other effects (and it will), the Patent Reform Act creates new uncertainty by changing the definition of the activities that constitute prior art, changing the scope of prior art activities from those that occur in the United States to those that take place anywhere in the world, requiring that the nonobviusness of an invention to an ordinarily skilled person be judged as of the time a patent application is filed and not at the earlier time when it was actually made (when the problem may have been more difficult and the information and technological principles helpful in solving it less useful), broadening so-called prior user rights, and making other changes.

The Patent Reform Act also ignores the issues on which legislation could helpfully reduce uncertainty, such as redefining the public use and on sale doctrines so inventors trip over them with less frequency, eliminating means-plus-function claims, eliminating the doctrine of equivalents or adopting a more well-defined doctrine of equivalents, eliminating the misuse defense or at least making it co-extensive with the antitrust limits on exploiting patents, redefining the law the courts have developed after *Lear* and will develop after *Medimmune* so

patent owners and licensees may provide royalties that sensibly reflect the value of an invention in view of legal uncertainties and that eliminate the possibility of needless and expensive litigation, and making many other desirable changes.

However given whatever substantive law exists at any point in time, patent owners and potential licensees should be permitted to adjust the price and other terms on which they do business in the face of that uncertainty. The price adjustment in any particular situation will depend on the owner's and licensee's views of the probability a court would decide a certain issue in a certain way and perhaps even more importantly on the owner's and licensee's aversion to risk or, if it exists, preference for risk. Whatever the outcome in a particular situation, the law should encourage them to make those agreements by enforcing their terms.

The law should not force patent owners and potential licensees to resolve the uncertainty by seeking assistance from the Patent and Trademark Office or the federal courts. Private agreements between patent owners and potential licensees will reduce the costs of uncertainty and facilitate the use of patented inventions in spite of that uncertainty far more efficiently and quickly than proceedings in which the Patent and Trademark Office or the federal courts. For that reason, I do not expect the various proposals in the Patent Reform Act for repeated Patent and Trademark Office review of patentability to yield significant benefits and rather expect it primarily to yield increased costs and delay. Our prior experience with various forms of reexamination should have taught us about the limited value of repeated administrative review.

F. Transparency

The notice asks about "transparency" in the market for intellectual property rights. Transparency could mean several things. Since I am not sure what the FTC means by transparency, I am not sure I have useful comments. Transactions between patent owners and their licensees did not contribute to the current economic problems facing the United States that have prompted talk about transparency. Transactions in intellectual property rights are private contracts between patent owners and producers of goods and services. These citizens make contracts regarding rights granted by the federal government. However, except for the recipients of government research subsidies, the people owning those rights spent their time and their money to create the underlying inventions and will bear the costs of operating under these contracts.

There is no legitimate government interest in forcing those individuals and companies to disclose the existence or the terms of those agreements to others, including the federal government, except to the extent that those disclosures are necessary for purposes of the securities laws or legitimate inquiries in connection with antitrust, tax, or other similar matters. The existence and terms of license agreements should not be disclosed to the public to enhance transparency or to permit the government or people who are not parties to particular transactions to learn of their terms. People and companies have a variety of reasons for keeping this information secret, including the fact that the confidentiality of contract terms often enhances the ability of the parties to reach an agreement on terms under which each party benefits.

Some people believe that the market in which patent rights are bought and sold would work better if sellers and buyers were required to disclose the prices of their transactions.

Nothing would be gained by such a legal requirement. The only people who need to know the price of a particular transaction are the people who made the transaction. They are the only people affected by the price. If they chose for any reason to keep the price confidential, that is entirely their business. If the law overrides their desire to keep the price confidential, the law defeats whatever purpose was served by keeping this information secret.

A government requirement of public disclosure is not a neutral act. A disclosure requirement would change the terms on which people are willing the deal and reduce the number of such contracts, because disclosure defeats the interests of a party or parties served by confidentiality. In particular, if the government required public disclosure of the price terms of licenses, the prices at which patent owner and potential licensees do business will change, the number of licenses will decline, and the profitability of licensing will be reduced.

II. General Comments

I offer four general comments at the outset.

A. The Patent System Relies on the Market to Determine the Prices for Patented Products; High Prices Show that the System Is Working

The FTC asks in the notice whether there are legal doctrines resulting in patent owners being "systematically over-compensated" or "systematically under-compensated". Regarding the possibility of "systematic over-compensation", the notice identifies the potential harm being that "supra-competitive prices for technology would unduly dampen future innovation and prices for products incorporating patented inventions would increase unjustifiably."

First, I do not know what is a "supra-competitive price" for a patented invention or an "unjustifiably high" price for a patented product. Patent law leaves the prices of patented products to the market. The prices of patented products are determined by transactions between patent owners and their licensees or assignees and transactions between suppliers of products and services (whether patent owner or licensee) and their customers, all subject to market forces. Subject to sensible antitrust law, there is no price for a patented product that is "unjustifiably high" or in some sense "supra-competitive".[3] The point of patent law is to permit the price of a

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[3] It is true that patent damages have the potential to distort the value patent owners capture through litigation and the possibility of causing the prices of patented products to be too high. For example, if patent owners were able to obtain damages for infringement equal to several times the economic values of the inventions lost to patent owners or gained by patent infringers, it is possible that the price of patented products will be "too high." This would happen because such a damages rule would deter producers of substitute products and services from selling when doing so raised an issue of patent infringement. If producers of goods and services are deterred from selling products in the face of uncertainty about the validity or scope of patents, the price of patented products will be "too high" only to the extent that others did not sell substitutes and the patents would have been found invalid or the substitutes found not to infringe, if they had sold, and only to the extent that judges and juries made perfect decisions on those issues.

patented product to be higher than the price that would have prevailed if many companies were using that invention in competition with each other free of control by the patent owner. The goal of the patent system is also to encourage people to make inventions that are very valuable and permit patent owners to control use of those inventions so that new patented products will be sold at much higher prices than old products.

I do not understand the FTC to be questioning this concept. I simply caution that comments from the FTC about "unjustifiably high" or "supra-competitive" prices for patented products have the potential, when taken out of context, to do great harm.

B. Compensation of Patent Owners Is Not the Goal of the Patent System; the Goal Is To Create a Market for Patented Inventions by Enabling Patent Owner to Control Use of Patented Inventions

Second, it is perfectly sensible the ask whether damage awards over or under compensate patent owners. However, this is not a good question to ask about injunctions and most other legal rules. The goal of patent law is not simply to provide patent owners with "compensation" for use of their inventions. If "compensation" were the goal of patent law, the Patent Act would provide that anyone may use a patented invention subject only to liability for damages providing compensation. Patent law does not do that. Section 154 of the Patent Act provides that a patent grants its owner the right to exclude others from using or selling the invention. Section 271 says anyone who uses or sells an invention without the patent owner's authority infringes the patent and sections 283 and 284 provide for injunctions to prevent violations of the rights and damages to compensate for infringement.

The reason for exclusive rights and injunctions is to enable a patent owner to control who uses an invention and how they use it, and to require anyone who wishes to use an invention to buy the right to do so at prices and on other terms the patent owner and the user agree are mutually advantageous. This system has several advantages over one that merely provided compensation for use of patented inventions. One is that the value of inventions is determined by market transactions, not by damages rules and judicial determinations of value. Another is that inventions have greater commercial value than they would have if anyone were free to use those inventions subject to liability for damages.

However, the important aspect of the distortion caused by such a damages rule is not that the prices of patented products are too high. The important consequence is that there is too much litigation, too little licensing, and, because there is too little licensing, prices for patented products that are too low. It is unnecessary to think about the effects on product prices of damages that are too high or too low. If damages are greater than the economic value of inventions, the damages rule would be undesirable even if the rule had no effect on product prices. The harm from such damages awards is that the patent system has enabled a patent owner to earn through litigation revenue in excess of the economic value of the invention that patent law seeks to permit it to capture. That is reason enough to change such a damages rule. The same applies to damages that are too low.

Again, I do not understand the FTC to be questioning this concept. However rather than asking whether legal rules provide patent owners with proper "compensation", I ask whether recent or proposed changes in patent law enable the patent system broadly conceived to enable inventors who make patentable inventions to control use of those inventions so they have their greatest possible commercial value and to capture through sales, licensing and litigation, the value of those inventions, no more or no less. I would also ask whether the law operates in a way that enable patent owner and users of inventions to achieve these goals with the lowest possible transaction and litigation costs and the lowest level of risk.

C. The Law Should Enforce and Facilitate Agreements between Patent Owners and Users of Patented Inventions Even When Patent Rights Are Unclear and Even When Owners and Users Desire to Avoid Litigation

Third, the notice asks about the extent to which available remedies influence agreements to settle patent infringement actions and license patents. This is an important question to ask about remedies and all other patent law doctrines. We spend too much time and energy focusing on how patent law doctrines help or hinder the processes by which patents are granted, occasionally reviewed by the Patent and Trademark Office, and enforced by actions in the federal courts. If the Patent and Trademark Office and the federal courts were the only mechanisms for patent owners and providers of products and services to resolve issues about whether a particular invention is patentable, a particular patent valid or invalid, a particular product or service inside or outside the scope of a patent, the amount a producer would have to pay a patent owner in damages for unauthorized use of some patented invention, and whether a patent infringer should be able to continue infringing activities after losing an infringement action, the patent system could not function.

The patent system works only because the law permits patent owners and producers to enter and enforce agreements with terms that reflect what the parties to those agreements believe are appropriate answers to those patent issues and appropriate payments given their views on those issues. If a patent owner and a producer in a particular situation believe that there is about a thirty percent chance or a fifty percent chance or a seventy percent chance that the patent owner has a patent that satisfies the standards for a patent to issue and adjust the pricing and other terms of their agreement to reflect those views, their agreement should be enforced. If they wish to provide that neither party will not eliminate the effectiveness of the agreement by seeking a judgment from a court or a government agency that the patent rights are something different than the views that provided the basis for the agreement, that agreement should also be enforced.

There are well-known benefits to a system that relies on private agreements rather than government decisions to make these judgments.[4] To secure these benefits, the law must respect

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[4] One is that the people making these decisions about patent rights are people who have actually made inventions and often failed in the process, who have actually designed and built products based on understanding technology, and who have built and operated businesses based on their ability to understand the commercial value of technology. For all of these people, they have made money when they did these things well (and with good luck) and lost money when they did

and enforce these agreements, even when patent owners and invention users enter an agreement in the face of almost inevitable uncertainty about the "right" resolution of these issues,. If these people have had to make difficult judgments or even sometimes guess about the "right" result and adjusted the terms of their agreements accordingly, the law should respect their agreements. If the judgments of these people on patent questions are difficult, the same questions will be equally and probably more difficult for those in government and those in the courts. In my view, little is gained and much is lost by forcing these people to use litigation or even administrative decisions to "resolve" these issues.

For those reasons, I believe the patent system wisely relies on contracts and agreements between patent owners and producers to determine how inventions are used and the value that patent owners capture from commercial uses of their inventions. Those contracts and agreements are a far more efficient (that is better and less expensive) mechanism for the decision the patent issues and the transfer of revenue from producers to patent owners than administrative or judicial proceedings by the government.

For all of these reasons, an important test, if not the most important test, for determining the desirability of a particular legal rule is the extent to which it facilitates or interferes with agreements between patent owners and producers involving use of patented inventions. There are many legal rules that interfere unnecessarily with those agreements between patent owners and producers and those are the legal rules the government should change.[5]

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not do them well (or luck did not smile on them). The people who make decisions in government agencies and courts about patent issues only rarely have this background and this experience. They never have as much, if anything, at stake. Another is that the opposing financial interests of patent owners and invention users result in a prices for use of patented inventions that are constrained by the economic values of inventions. For an agreement to be made, some user believed the invention had a commercial value greater than the price it would pay and some patent owner believed that the price for use of the invention by that user was greater than the commercial value of the invention when used by some other user(s).

[5] I refer specifically to most of the rules that resulted from the *Lear* decision (though not the *Lear* decision itself when properly understood), the patent misuse rules that continue to override and punish licensing terms and practices that do not violate antirust law, an exhaustion rule that would prevent patent owners and their customers from selling and buying products and licensing the patent rights separately, and any jurisdictional rule that would prevent a patent owners and their licensees from agreeing to make payments at certain rates and in certain amounts on certain products without having the assumptions on which those terms were based litigated and second guessed by a court. I also disagree with any rule that poses an obstacle to patent owner and potential patent infringers talking about how to resolve these issue, including any rule that uses such discussions as the basis for the potential infringer to commence a declaratory judgment action, any rule that uses such discussion as the basis for an estoppel defense and any rule that would use discussions in any way to decide what remedies are available. I also disagree with the venue rules that permit patent infringement and declaratory judgment actions to be brought in judicial districts having little or no relation to the places where patent owner and an accused

D. Patent Law Imposes Costs in the Present and the Near Term to Achieve Gains in the Future and the Long Term; Beware of Those Focused on the Present or the Near Term

Fourth, this is not the best time to legislate changes to patent law. The costs of patents are always in the present. Due to existing patent rights, prices for existing products are higher than they otherwise would be. The benefits of patent rights are in the future and for many important inventions in the far distant future. Under normal economic conditions, there is a tendency for people in elective office to be more concerned about the effects of law in the next one to three years than in later years. Effects ten to twenty years away often appear out of sight and out of mind. Under current conditions, that tendency is heightened by a desire in Washington to improve economic conditions over the next few years.

Under these conditions, changes to patent law that provide short-term relief from the costs of patents may appear desirable to achieve the economic gains that would result in the next few years, even though the losses in later years from reduced incentives to invent would be many orders of magnitude larger than those short run gains. For that reason, the government should be approach legislative changes to patent law with great caution.

III. Permanent Injunctions

The notice mentions the Supreme Court's decision *eBay Inc. v. MercExchange* and asks for comments about when it makes economic sense for a court to issue a permanent injunction and what a court should do when it does not make sense to issue a permanent injunction.[6]

A. *eBay*

The Court's decision in *eBay* has caused confusion about how judges are to decide whether to issue permanent injunctions. It causes particular confusion in cases involving a patent owner which exploits an invention entirely or in part by licensing. For such a patent owner, the question is whether an injunction should issue even though it would be in the economic interests of the patent owner to license an adjudicated infringer. Subject to the situation discussed later, the answer is that a patent owner's willingness to license some infringer is not a reason to deny an injunction.[7] It is the reason to grant an injunction.

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infringer conduct their businesses related these issues and rules governing changing venue that attach too much importance to where the first action was filed.

[6] This discussion is based on John W. Schlicher, *Patent Law: Legal and Economic Principles*, West Group (1992, Second Edition 2003), Chapter 9, § 9.2.

[7] I put aside the issue of whether an injunction should issue if doing so would cause significant harm to the general public by stopping operation of some essential facility (such as a sewage treatment plant, a municipal railroad, or a city's fire service) or eliminating for a time the only supplier of an essential medicine. These are well-known situations in which the courts have denied injunction based on harm to the public.

B. What the Court Decided and Did Not Decide

In that action, a district court declined to issue an injunction and the Court of Appeals for the Federal Circuit reversed. The district court gave a couple reasons for denying the injunction, including the patent owner's willingness to license. The Court of Appeals rejected those reasons and said an injunction should issue even if a patent owner is willing to license.[8] However, neither the district court nor the Court of Appeals explained their decisions using the traditional four-part test governing whether courts issue injunctions in all types of cases. The Patent Act, of course, requires that the "courts having jurisdiction of cases arising under this title may grant injunctions in accordance with the principles of equity to prevent the violation of any right secured by patent ... ."[9] Because the district court and the Court of Appeals did not explain their decisions in the language of the traditional test, that is, the principles of equity, the Supreme Court reversed.[10]

eBay should be understood to mean that the courts must apply the principles of equity in determining whether to grant an injunction, as the Patent Act commands, and may not apply a general rule that an injunction should issue if the patent owner prevails. The Supreme Court instructed judges not to automatically grant the injunctions at the conclusion of patent actions. The Court insisted that judges make decisions on injunctions by applying the concepts of "irreparable harm," the inadequacy of "remedies available at law," "the balance of hardships," and the "public interest."

The Court was careful to say that it was not deciding whether an injunction should have issued in the *eBay* situation. The Court decided nothing about whether a patent owner exploiting an invention by licensing or a so-called non-producing patent owner should have injunctive relief. Unfortunately, Justice Kennedy's concurring opinion may be read to say something about those issues.

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[8] *eBay Inc. v. MercExchange, LLC.*, 401 F.3d 1323, 1339 (Fed. Cir. 2005)("The trial court also noted that MercExchange had made public statements regarding its willingness to license its patents, and the court justified its denial of a permanent injunction based in part on those statements. The fact that MercExchange may have expressed willingness to license its patents should not, however, deprive it of the right to an injunction to which it would otherwise be entitled. Injunctions are not reserved for patentees who intend to practice their patents, as opposed to those who choose to license. The statutory right to exclude is equally available to both groups, and the right to an adequate remedy to enforce that right should be equally available to both as well. If the injunction gives the patentee additional leverage in licensing, that is a natural consequence of the right to exclude and not an inappropriate reward to a party that does not intend to compete in the marketplace with potential infringers."), rev'd on other grounds, 547 U.S. 388 (2006).

[9] 35 U.S.C. § 283.

[10] See *eBay Inc. v. MercExchange, LLC.*, 547 U.S. 388, 393-94 (2006).

C. Problems Created by *eBay*

eBay creates several problems.

1. The Implication that District Judges Must Make Decisions with No Guidance from the Past

First, the Court instructs judges to apply the traditional four part equity test. *eBay* gives the impression that the courts have never applied traditional equitable principles in patent actions and now for the first time must figure out how to do so. Equitable principles have been applied to injunctive relief in patent actions for well over one hundred of years before the Court of Appeals for the Federal Circuit existed.[11] As Justice Roberts said (concurring with Justices Scalia and Ginsburg), the lesson of history is that courts have granted injunctive relief in the vast majority of patent cases, because it is difficult to protect a right to exclude through monetary remedies that allow an infringer to use an invention against a patent owner's wishes. However, Justice Kennedy (joined by Justices Breyer, Stevens and Souter) said this historical practice may not be relevant today, suggesting that it is only recently that patent owner have exploited their inventions by licensing, Patent owners have granted licenses since the inception and it is safe to say that more patents have been exploited by more people through licensing than production and sales. Given this misperception by these four Justices, district judges may believe that they are on their own in this new world and must figure out for the first time what is best to do. This situation creates uncertainty.

2. The Vagueness of the Traditional Equity Test, When Applied to Patents

Second, the language of the traditional test provides little, if any, guidance on how the courts should decide whether to grant an injunction in a patent case. The test says a patent owner must demonstrate that: (1) it has suffered an irreparable injury; (2) remedies available at law, such as monetary damages, are inadequate to compensate for that injury; (3) considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) the public interest would not be disserved by a permanent injunction.[12] These words are so general that district judges are free to do almost anything. What is "irreparable injury" and how do you decide if "damages are inadequate to compensate for that injury"? What does it means to consider whether "the balance of hardships between the plaintiff and defendant" warrants an injunction? When would granting an injunction not serve "the public interest"?

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[11] See cases cited in Continental Paper Bag Co. v. Eastern Paper Bag Co. 210 U.S. 405, 426 n.1-2 (1908).

[12] This test was written to be applied in a legal system with two types of action – actions at law and actions in equity. These two types of actions applied to patent infringement claims. A patent owner bringing an action at law had different monetary remedies than a patent owner bringing an action in equity. This distinction vanished long ago. Asking questions about the adequacy of remedies available at law no longer makes any sense, because there are no actions at law and damages are the same in all actions. The courts ignore all these difficulties.

I will discuss in a moment why I believe that permanent injunctions should be granted except in a limited, well-defined situation. It is possible to apply this test in a way that has that result. However, the language of the test hardly compels that or any other result.

3. The Potential Short-Sightedness of the Traditional Equity Test, When Applied to Patents

Third, the traditional test seems to focus primarily on the effect of an injunction on the parties to one action. The danger is that judges will understand the test to mean they are to decide only how granting or denying an injunction would affect the parties to that action and the public based on how this particular invention will be used. The test says the court is focus on the balance of hardships, meaning whether denying an injunction will harm the patent owner more than granting an injunction will harm the infringer. The test is more usefully applied by asking whether granting an injunction would provide a net future benefit to the parties, that is whether the benefit the patent owner more than harming the infringer. Even if applied in that way, the test may easily be understood to say we have this invention and the only issue is how best to use this invention in the future.[13] Such a test is inappropriate to a well-functioning patent system.

One potentially-omitted consideration is fairly obvious. The decision to grant or deny an injunction for one patent in one action will affect the future expected value of patents to other inventors of other inventions. The four factor test may easily be read to make this consideration irrelevant. We have this invention so incentives to make other inventions do not matter.

So far, the results have apparently been that permanent injunctions are denied in a large percentage of patent actions, some estimates being as high as about 30 percent. If all future inventors believe that they have a 70 chance of obtaining an injunction in an infringement action, I would not be surprised if they regard a patent to have about 50 percent of the value the patent would have if injunctions were granted in 95 or 100 percent of actions. The impact of the decisions denying injunctions on actual perceptions will depend on whether those decisions explain the reasons for the denial in ways that permit inventors to believe that injunctions are being denied only in special cases and for reasons that do not apply to patents generally. So far, I do not see this precision in the decisions.

4. The Failure of the Traditional Equity Test to Reflect the Critical Role of Injunctive Relief in a Market Driven Patent System and the More Limited Role of Damages

Fourth, the traditional test also potentially-omits a second important consideration. It is that the patent system is designed to permit the market to decide how inventions are used, by whom, and at what prices. The patent system is not designed to require judges to make those

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[13] The test should not ask how to do the least amount of harm, that is, ask whether the harm of denying the patent owner an injunction is greater than the harm to the infringer from granting an injunction. What we want to know is whether the benefits to the patent owner if an injunction is granted exceed exceeds the harm to the infringer if the injunction is granted. If so, we are all better off after the grant of the injunction than before.

decisions. The traditional test implies that judges are primarily responsible for those decisions. The traditional test assumes that future use of the invention will be controlled by the injunction. In many types of litigation, the traditional test works, because the parties are not able to waive the effect of injunction. However, a patent owner may waive its rights by granting a license, even after an injunction issues. There is nothing in the traditional test that tells the judge how to take this into account or even whether it is proper to do so. If the judge ignores potential licensing, the judges may decide that it is wasteful to order someone who could make $10M in future profits using an invention to make products to stop when the person requesting the injunction patent owner is unable to use the invention to make any products.

In the patent context, the whole point of the injunction is to create proper incentives for use of the invention, whether by production or by licensing. This critical point is not part of the four factors.

The notice asks, "How should the analysis [of whether to grant a permanent injunction] take into account the incentives to innovate provided by the patent system and the benefits of competition?" My answer is that the analysis should explicitly recognize that granting injunctions is critical to the functioning of the patent system and that the patent system is designed so that decisions by patent owner and users of inventions govern by whom and how inventions are used and at what prices. In my view, the law provides for damages, because there is always a delay between the time infringement begins and judgment is entered. Damages must be available to fill the gap. However, damages are no substitute for an injunction.

The law should be that an injunction is the preferred remedy against patent infringement. There are five reasons. Injunctions (1) enable inventions to be used in ways and at prices that reflect private decisions and market transactions, (2) provide patent owners with control over use of inventions, (3) reduce the resources wasted due to infringement, (4) reduce litigation costs and (5) limit the effect of deficiencies in current damages law.

First, patent law relies on market transactions to assign to each invention a proper value and to provide each patent owner with that value. Markets work by agreements. Agreements about patented inventions are possible only when a potential or actual user of an invention knows that, before it may lawfully use an invention, it must obtain a patent owner's permission and pay a price the patent owner and the user find mutually acceptable. The denial of injunctions prevents the market transactions on which the whole system of rights depends. If judges think it is their responsibility to replace market decisions on how some invention is used in the future with judicial decisions, the fundamental requisite for a market-based patent system is eliminated. Inventions will be rewarded and used based on market incentives only if a judge decides the market should operate.

Second, injunctions have another benefit – they increase the value of patented inventions in a way that damages do not. Damages simply divide past pies. Injunctions increase the size of future pies. Patent owner control of inventions increases the commercial value of those inventions, because it is in the patent owner's interest to maximize that value. Patent owners exercise that control by deciding directly or specifying in licenses what products to sell in what amounts at what prices to what customers through what distribution channels with what amounts of marketing and customer service in what places at what times, what processes and with what

equipment and materials to use to make those products, and what amounts to invest in product development, marketing efforts, and customer service. Patent owners make those decisions to try to increase the profits available from use of their inventions.[14]

Even if damages were always able to measure perfectly the economic value the invention would have had to a patent owner if there had been no infringement by anyone, damages are an inadequate remedy, because damages provide patent owners with no control over use of inventions.[15] With only damages as a remedy, inventions would be used by any company that wanted to use them to sell any products it wanted in any amounts at any prices to any customers through any distribution channels with any amount of marketing and customer service in any places at any times, to make those products by any processes and with any equipment and material, and to invest any amounts in product development, marketing efforts, and customers service. Damages provide patent owners with no control. Loss of patent owner control decreases the commercial value of patented inventions and prevents the price for use of inventions from reflecting their full potential value.

Third, even if the law could sort out perfectly the amount of money the patent owner would have made if no one infringed and the invention were used in the way patent owner control and market transactions would have dictated and assign to each infringing company its share of the loss, the harm done is not remedied because during the period of infringement the invention was used in ways that wasted real resources.

For example, assume that if an invention is used subject to patent owner control and market transactions with the owner, 1000 units of some product are made and sold. This is the quantity yielding the largest profit. Given the rights, the only resources (that is equipment, materials, labor and so on) that should be devoted to making these product are the amount needed to make 1000 units. If a patent infringer uses more resources to make 2000 units, the resources used to make the extra 1000 units have been wasted. Those resources would have yielded greater benefits for consumers and contributed more to total national product, if they had been used to make some other product.

For another example, assume that if an invention is used subject to patent owner control and market transactions with the owner, the only company using the invention would sell a product to 1000 consumers at a price of $1000 and make the product at costs of $500 per unit. If an infringer supplies the same customers with a product they value at $800 (it is less valuable to them, but at the lower price is a better value than the authorized product) and makes that product

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[14] Patent owner control also allows the prices for use of inventions to approximate their full value by permitting patent owners and invention users to decide on pricing formulas.

[15] It is somewhat ironic that the debate over whether injunctions should be granted involves almost no discussion of whether damages if fact work this perfectly. However, when damages are discussed as a separate subject, the numerous and manifest deficiencies of damages awards are the subject of wide criticism, often by the same people who want injunctions to be available on a more limited basis.

for $750 per unit, resources have been wasted. The authorized supplier would have used $500 of resources to generate $1000 of benefit for consumers, a gain of $500 per consumer. The infringer used $750 of resources to generate $800 of benefit for consumers, a gain of $50 per consumer. Even if the patent owner recovers a payment for the amount it should have made, the resources wasted by the infringer are still gone and country is poorer as a result of this waste.

Damage payments to patent owners do not make up for the resource waste caused by infringement. The economic distortions caused by infringement mean that real scarce resources have been wasted. Damages may compensate the patent owner for the waste. Damages do not compensate the general economy for the waste.

Fourth, injunctions reduce litigation costs. If a court denies an injunction and simply dismisses and sends the parties on their way, the defendant may continue to sell the infringing product and a series of lawsuits follow in which the patent owner captures some of the value of its invention as damage awards. The costs of litigating to obtain those damages awards are very large. Injunctions save those costs.

Fifth, injunctions limit the effect of deficiencies in current damages law. The traditional test implies that damages may generally be an adequate substitute for an injunction. The traditional test reveals no preference for one type of relief than the other. Indeed under that test, the patent owner may obtain an injunction only be showing why damages are inadequate. This might suggest an unfortunate preference for damages. If injunctions are denied, the value of a patent depends entirely on whether the law of damages permits patent owners to capture amounts equal to the economic value of their inventions. If injunctions are denied, the ability and incentives of patent owners and invention users to do business in patent rights depends entirely on the law of damages. As I discuss later, the law of damages does not consistently and predictably result in awards equal to the economic value of inventions. For that reason, denying injunctions undermines the desired effects of patent rights by increasing the importance of damages.

Consider one example. While I have not counted cases, it is likely that the most frequently used measure of damages is the hypothetical negotiation approach. Damages are measured by what a patent owner and an infringer would likely have agreed upon in a hypothetical negotiation for a license. It is implicit in this approach that the infringer will not be able to use the invention without first reaching agreement with the patent owner. In other words, it is implicit that, if the infringer does not reach agreement and nonetheless uses the invention, the infringer will be prevented from doing so by an injunction. Since the infringer in the hypothetical negotiation may not use the invention without an agreement due to an injunction, it will pay up to the economic value of the invention for a license. However, if the law is that injunctions will not issue in some category of situations, the hypothetical negotiation measure of damages is impossible to apply. In that category of situation, the infringer may use the invention without first reaching agreement with the patent owner. It need merely pay damages, if it does. Since the infringer may use the invention without an agreement, it will pay up to the amount of the damages award for a license. What is the amount of the damages award? It is the amount likely to be agreed on in a hypothetical negotiation. However, the hypothetical negotiation cannot produce an agreed amount unless the amount of damages is determined in some other way. Under this state of affairs, damages may not be determined without knowing the result of a

hypothetical negotiation and the result of a hypothetical negotiation may not be determined without knowing damages. As Professor Richard Gilbert aptly put it during the hearings in California, the determination of damages will have become circular.

Under this state of affairs, patent owners and producers will have no idea what to do. The amount of damages will be almost completely random. As a result, in the categories of situations where injunctions are denied, licensing will become virtually impossible. There will be not way to agree on a price because there will be no way to determine the amount of likely damages if there is no agreement. Over time, patents could easily have only a small fraction of their current value, because the remedies for patent infringement will have almost completely failed.

For those reasons, injunction should be the preferred remedy for patent infringement. If the courts are unable to achieve this result, the Patent Act should be amended to reflect this preference.

5. The Risk that Injunctions Will Be Less Available to Patent Owners Who License

Fifth, the Court's *eBay* decision should not be understood to mean that an injunction should issue only to patent owners producing or selling products or to patent owners unwilling to license some adjudicated infringer. There is nothing in the Court's decision to indicate that an injunction should be withheld because the patent owner does not sell products or is attempting to grant the infringer a license.

Justice Thomas' opinion for the Court was careful to say that the district court's denial of the injunction based on the patent owner's willingness to license its patents and its lack of commercial activity in practicing the patents was not a sufficient basis to establish that the patent holder would not suffer irreparable harm if an injunction did not issue. He noted that many inventors, such as university researchers or self-made inventors, "prefer" to license their patents. He said these inventors may be able to satisfy the traditional test. Justice Thomas said the Court of Appeals departed in the opposite direction from the four-factor test, by applying a general rule that a permanent injunction will issue once infringement and validity have been decided.

The Court said nothing about the Court of Appeals' statements that injunctions are available to those who practice their patents and those who do not, and to those who license and those who do not. The implication is, as the Court said in discussing the district court's decision, that patent owners who do not sell products and patent owners who license may obtain injunctions. Finally, Justice Thomas said the Court was taking no position on whether permanent injunctive relief should or should not issue in that particular case or in any other patent case.

While the Court's opinion should not be understood to mean that an injunction should issue only to patent owners producing or selling products or to patent owners unwilling to license some adjudicated infringer, the concurring opinion of Justice Kennedy may be read to say that companies exploiting patents by licensing should not have injunctive relief. In my view, they should, except possibly in the situation discussed later. If the value of an invention to a

particular patent owner is enhanced by granting a patent infringer a license, an injunction should issue, because only an injunction will induce an agreement at a price reflecting the value of the invention as understood by the patent owner and the infringer and on other terms that will best increase the value of the invention.

A patent system should provide a patent has equal value to all types of inventors. Patent law should not make patent rights (and therefore the value of inventing) more valuable for producing companies than non-producing companies or more valuable for a company that does not license than a company that does. All potential sources of inventions should be encouraged equally. All patent owners need an injunction to capture the value of their inventions and to control use of those inventions. For example, suppose there are two inventors, one produces products and one does not. The producer may exploit its inventions by making and selling products. The producer needs an injunction so that it captures all the sales, sells at prices not limited by infringement, and invests to improve the value of the invention without the constraint on the value of those investments that infringement would impose.

The non-producer has exactly the same need for an injunction. The non-producer goes to a company that is able to produce and offers to license. The potential licensee asks whether the patent owner will prevent other companies from infringing if it takes a license, pays and sells. If the patent owner says yes, and the law permits to patent owner to perform that promise (by an injunction), the potential licensee will agree to license knowing (like a patent-owning producing company) that it will capture all the sales, sell at prices not limited by infringement, and make investments that enhance the value of the invention without fear that infringement will prevent a return to those investments.

If the law is that the non-producing patent owner may not obtain an injunction, the value it will capture by licensing will be lower, because the licensees will not have the benefits that patent makes available to sellers who own patents. If potential licensees expect that prices will lower, quantity smaller, investment returns lower due to the lack of injunctive relief, the value of the invention to licensees is lower and the value of the patent to the non-producing patent owner is lower.[16]

In sum, if the law is that commercial operations of a producing patent owner will not be distorted by infringement (due to an injunction) and operations of licensees will be distorted (due to no injunction), inventing is more valuable to producers than non-producers. Non-producing patent owners may try to solve this problem by selling patent to a producer merely to change legal result.

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[16] The non-producing patent owner faces a similar disadvantage with damages. Unless the patent owner may achieve its licensing objectives by granting one exclusive licensee substantially all the rights, the non-producing patent owner may not recover as damages the profits infringement caused its licensees to lose. For that reason, damages are potentially less valuable to the non-producing patent owner and in turn to the licensees, who bear the costs of the infringement and will accordingly pay less for the license. The producing patent owner may recover its lost profits.

6. The Economic Effects of the Granting or Denying a Permanent Injunction

The notice asks what the appropriate remedy is if an injunction is denied. I would ask a broader question – what happens if an injunction is granted and if it is denied.

If a court issues an injunction, two things may happen. One, the enjoined infringer stops using the invention, by either ceasing to sell the infringing product or modifying its product by using the next best alternative, non-infringing invention available to it. Two, the parties agree to a license permitting the infringer to continue to sell the infringing product in exchange for something of value to the patent owner, typically a payment. Experience shows and the available data strongly suggests that the vast majority of patent infringement actions are ultimately resolved by the patent owner granting a license to the accused infringer. In general, the amount of that payment may not possibly be exorbitant, because it is bounded by the true economic value of the invention to the infringer. If the payment were greater, the infringer would not have agreed to the license. The only fair grounds for debate are situations discussed later.

If a court decides not to issue an injunction, two other things may happen. One is that the court simply sends the parties on their way, in which case the defendant may continue to sell the infringing product, and a series of lawsuits follow in which the patent owner captures some of the value of its invention as damage awards. The defendant's actions will depend on whether it will be subject to increased damages and an attorneys' fee award if it continues to sell the infringing product. The defendant will either ask the court to provide assurance that these remedies will not apply to its future sales or argue that it is implicit in the court's denial of an injunction that it would be subject only to single damages in the future. After the dismissal, an infringer's continued sales of the infringing product, unrestrained by any payment obligation, will continue to depress the value of that invention the patent owner may capture by licensing others or using the invention itself. The portion of the remnant of the value of the invention ultimately paid to the patent owner will depend on whether patent damages standards result in economically sensible awards. The patent owner's ultimate recovery will be reduced by the litigation costs of the damages trials.

Two, the court, not happy about the prospect of a series of damages trials, orders the parties to enter a license having agreed upon payments and terms or a license that the court orders the parties to enter if they fail to agree. The court may also simply order the infringer to make payments in the future based on some stipulated amount or an amount the court sets. This outcome is more likely than the first.

These are the likely effects of the courts' assertion of the power to order a patent owner to license or to authorize continued use of the invention subject to a court ordered payment obligation.

In situations where there are gains to be had by licensing, potential licensees will test whether they are able to obtain more favorable license terms from the courts than from patent owners. They will sell without a license to cause the infringement action needed for a court to exercise the power to order patent owners to license. There will be less licensing and more

infringement litigation. In situations where there are no gains to be had by licensing, potential infringers will test whether they are able to obtain licenses from the courts that patent owners would not otherwise grant. There will again be more infringement and more litigation.

Whatever the situation, in actions where injunctions are denied, federal district judges effectively become the government regulators of patent licenses. This means judges must make three types of decisions – whether the patent owner must license, what company or companies obtain a license, the price for a license and manner in which licenses specify the price, and the other non-price terms of licenses such as the products a licensee may sell, the quantity of those sales, the customers to whom it may sell, the distribution channels for those sales, and on and on. The desirability of this regulation depends on whether patent owners and potential licensees make these decisions about future use of inventions in a purely private negotiations better than courts or in judicially supervised negotiations with the court as the final arbiter of points of disagreement. My view (and I am not alone) is that private negotiations between patent owners and potential licensees produce better outcomes than decisions by courts.[17]

With judicial control of licensing, patent owners lose the most basic factor controlling of their financial futures - the ability to select the companies with whom they do business. Patent owners select from all potential licensees those companies most likely to perform the obligations they agree to in contracts and resolve issues that may arise by discussion rather than by litigation. If the courts determine which companies receive licensees, patent owners effectively lose the right to decide with whom they do business. Patent owners are likely in many situations to have reservations about wanting to do future business with companies that have forced them to endure the costs and uncertainty of litigation and have been found to have violated their patent rights. If courts rather than patent owners decide what companies receive licenses, companies that have poor records for performing the obligations under agreements and that prefer litigation to agreements as a means of resolving disputes gain and patent owners lose.

Assume the court decides the patent owner must license. The court must then decide the right price. A district judge may have learned during a trial something about the value some invention had in the past. However, a judge will likely have learned nothing about the invention's future value and only the future matters for licensing. It is almost inconceivable that judges could regularly or even occasionally come close to setting prices for licenses that approximate what the parties would have agreed on, if left to work something out on their own. My expectation is that, when the courts directly set prices for licenses made after judgment in

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[17] See, *Matter of Mahurkar Double Lumen Litigation*, 831 F. Supp. 1354, 1396-97(N.D. Ill. 1993) ("A patent conveys the right to exclude others from making, using, or selling the invention, and this right implies the propriety of an injunction enforcing exclusivity. The injunction creates a property right and leads to negotiations between the parties. A private outcome of these negotiations - whether they end in a license at a particular royalty or in the exclusion of an infringer from the market - is much preferable to a judicial guesstimate about what a royalty should be. The actual market beats judicial attempts to mimic the market every time, making injunctions the normal and preferred remedy. *See* Schlicher, Patent Law: Legal and Economic Principles §§ 1.14, 9.03[1].").

situations where there are gains from licensing, those prices will be lower than those at which the patent owner would have been willing to license, if an injunction had issued. For other licenses made after judgment, I would expect prices to go down as patent owner agree to lower prices simply to avoid whatever the judge might do.

If post-judgment prices for licenses go down, this in turn will indirectly reduce the prices for licenses made before or during litigation in situations where a patent owner and a potential licensee believe there is some chance a court would deny an injunction.[18] The effect on patents generally will depend on whether patent owners and potential licensees believe injunctions will be denied only in well-defined and limited situations or may be denied in almost any situation. Whether limited or far reaching, the result will be that the value of patents declines. Since prices for licenses are likely to be artificially low, the supply of inventions in the future will be too low and inventors will rely less on patents and more on other methods of earning some returns to inventing.

The court may then have to rule on pricing formulas and non-price terms. Patent owners do not grant licenses in the following form: "Jones grants Smith a license under Jones' patent and Smith agrees to pay Jones $X." Patent owners employ an enormous variety of license terms and licensing practices to enhance the value created through use of inventions by licensees. They employ pricing formulas to capture a portion of that value in a way that provides the best incentives for use of the invention by licensees. They employ other terms to reduce the costs and risks the parties bear by operating under these licenses.

Consider two examples. Patent owners use an enormous variety of devices to achieve economic discrimination, that is, to charge different royalties to different licensees and for different uses so that royalties accurately reflect the different values inventions have to different licensees and in different uses. If a court requires that the patent owner grant some company having high value for the invention at a royalty appropriate for a low value licensee, the patent owner loses and other high value licensees may lose, because the low rate the court gave one of its competitors gives that licensee a cost advantage. If the court requires that the patent owner grant some company a license to make all uses of the invention at a single royalty rate, the activities of that licensee may reduce the sales of the high value licensees obligated to pay higher royalties, and both the patent owner and those licensees lose.

Patent owners also grant one license or a limited number of licenses to provide incentives for licensees to invest in further research, product development, marketing, and service to enhance the value of the invention to consumers. If the court requires that the patent owner grant some additional company a license, the activities of that licensee will reduce the incentives of

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[18] Indeed, lawyers are likely to test the limits of the courts' power to order a patent owner to license by actions asserting that, since the court has the power to order a patent owner to license an infringer after judgment of infringement, the court also has the power to force a patent owner to license before a judgment. If the courts assert that power, the courts become the regulators of all licensing. If patent owners believe courts have that power, the value of patents generally will decline and could decline to a small fraction of their current value.

existing licensees to continue to make the investment the patent owner is trying to induce them to make and, indeed, render valueless the investments those licensees previously made counting on the patent to provide the exclusive or partial exclusivity that made those investments profitable.

These are merely two examples. There are many more. The point is that patent owner employ an enormous variety non-price terms to provide incentives for licensees for licensees to act in various ways to enhance the commercial value of invention. If a patent owner or its potential licensees believe that there is some chance that a court will end up defining the non-price terms under which a patent owner must license some company, the potential licensees will be far less willing to accept the terms the patent owner wishes to use. The result will be that the profitability of licensing for patent owner and licensees decline.

In sum, if the district courts begin deciding what companies may use an invention, what prices they pay, what products may be sold, the quantities sold, and all of the other things that determine the commercial value of an invention, the value of patents will decline significantly and the commercial use of patented inventions will be far less efficient than when patent owners and their licensees make those decisions. To avoid that result, permanent injunctions are the economically sensible remedy for patent infringement in most actions. While these considerations could be decisive under the traditional four part test, it is unclear to me the tradition test as perceived and employed by the courts will lead to this result.

D. Injunctions when a Producing Company Has Significant Product-Specific Investments in Development, Manufacturing and Marketing Assets Useful Only if the Company Continues to Sell Its Existing Product

1. The Problem Discussed in the Kennedy Opinion and the FTC 2003 Report Is Not New

Aside from injunctions that would have significant, harmful and unavoidable consequences for the public generally, the difficult issue is whether there are situations in which it is in the interest of the patent owner to license the infringer and the patent owner would do so if the injunction is granted, and yet granting an injunction would permit a patent owner to obtain a price for continued use in excess of the economic value of the invention as defined for purposes of patent law. This may have been the issue Justice Kennedy alluded to when he referred to the FTC's 2003 report.[19] This opinion said that the historical practice of using

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[19] See, *eBay Inc. v. MercExchange, LLC.*, 547 U.S. 388, 396-97 (2006)(Kennedy, J. concurring)("In cases now arising trial courts should bear in mind that in many instances the nature of the patent being enforced and the economic function of the patent holder present considerations quite unlike earlier cases. An industry has developed in which firms use patents not as a basis for producing and selling goods but, instead, primarily for obtaining licensing fees. See FTC, To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy, ch. 3, pp. 38-39 (Oct.2003), available at http://www.ftc.gov/os/2003/10/innovationrpt.pdf (as visited May 11, 2006, and available in Clerk of Court's case file). For these firms, an injunction, and the potentially serious sanctions arising from its violation, can be employed as a bargaining tool to charge exorbitant fees to companies that seek to buy licenses to practice the

injunctions may simply have reflected that companies in the past used patents as a basis for producing and selling goods and that practice may not be instructive in cases "now arising," where firms use patents primary for obtaining licensing fees. For these presumably new types of firms, an injunction "can be employed as a bargaining tool to charge exorbitant fees to companies that seek to buy licenses to practice the patent." When such firms seek an injunction "simply for undue leverage in negotiations," this opinion says an injunction may not serve the public interest.

In the pages of the report Justice Kennedy cited, the FTC discusses an number of different issues that it broadly characterized "hold-up" issues. The report talked about how it is difficult in some situations for companies to learn about and deal in some manner with all the patents on inventions they might use in a product before making R&D and manufacturing investments and how royalties are likely to be higher for a company when a license is negotiated after it made these investments.[20]

It is true that the price a producing firm will pay for a license is likely to be higher if the negotiation occurs after the firm has invested in product development, manufacturing facilities and equipment or marketing programs and the resulting product and process designs, facilities and equipment, and customer information and good-will have very little or no value if the firm may sell nothing or must sell an alternative non-infringing product. These types of costs may be called product-specific investments and the resulting assets product-specific assets, because the assets have little or no value with other products. These investments are sunk; the producing company is unable to change the situation.

Before a firm has made these investments, it will pay for a license no more than the difference between the additional revenue it will earn using the invention and the average total cost of using the invention, including the costs of these product-specific assets and other

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patent. See *ibid.* When the patented invention is but a small component of the product the companies seek to produce and the threat of an injunction is employed simply for undue leverage in negotiations, legal damages may well be sufficient to compensate for the infringement and an injunction may not serve the public interest. In addition injunctive relief may have different consequences for the burgeoning number of patents over business methods, which were not of much economic and legal significance in earlier times. The potential vagueness and suspect validity of some of these patents may affect the calculus under the four-factor test.").

[20] FTC Report (2003), chapter 3 p. 38-40:
"Panelists discussed the strategic use of patents in licensing negotiations, and in particular one type of strategic use, generally known as "hold-up." They discussed hold-up as enabled by sunk costs that a firm already has invested in product development or manufacturing, before learning of the patent, which in turn enable the patentee to demand royalties higher than it could have sought before the firm sunk its costs; with so very many patents at issue, panelists suggested, infringing *someone's* patent may be inevitable, but there may be no economically feasible way, prior to making sunk investments, to identify and obtain rights to all the relevant patented technologies." (footnotes omitted).

necessary investments plus some return to those investments.[21] After the firm has made these product-specific investments, it will pay up to the difference between the additional revenue it will earn using the invention and the average total cost of using the invention, excluding the cost of the product-specific investments and some return on them. At that time, the additional cost the firm must incur to use the invention do not include the product-specific investments. Therefore, the firm will accept a license if the revenue it earns after making the royalty payments are sufficient to cover other types of fixed costs (plus some return) and variable costs for materials, labor and the like, and provide at least some recovery of the cost of the product-specific investments. The assets produced by the product-specific investments have little or no value to the firm unless the firm uses the invention, so it is better off recovering some of the costs of producing those assets than recovering none of them. Of course, a patent owner may not always be able to obtain the firm's agreement to pay royalties at the higher rate, because the firm may threaten to sell nothing if the owner insists on the higher rate. However, where that threat is not credible, the rate will likely be higher.

This observation simply describes a category of licensing situations that has existed and been recognized by patent owners and potential licensees for a long time.[22] Royalties always

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[21] This assumes the only effect of using the invention is to increase the value of some product to customers and hence the revenue earned from sales and that the total cost of using the next best alternative are the same as the total costs of using the invention.

[22] See e.g., John W. Schlicher, Licensing Intellectual Property, Legal, Business and Market Dynamics, John Wiley & Sons (1996), chapter 1, p. 20, 53:

> For purposes of this discussion, it is assumed the owner of intellectual property rights is negotiating a license to rights already developed. The owner's costs of producing the information are sunk. It is also assumed a potential licensee's costs of using the information are not sunk. In this situation, a potential licensee has the alternative of rejecting the license and not incurring R&D, production, and marketing costs. Accordingly, a potential licensee will pay no more than the difference between the value it may capture from exploiting the rights and the average total cost of doing so, including some return to the licensee's investment in fixed assets. The owner may negotiate only for what is likely to be left over after the licensee has recovered those costs plus some return on invested capital.
>
> This sunk cost problem does not always work against the owner. If the potential licensee ventured into production and sale without a license, and the [potential] licensee already incurred some significant, specialized fixed costs for plant, equipment, and marketing, the price for the license will be higher than it would have been if negotiated before those investments. If an infringing company cannot sell the specialized fixed assets, it will accept a license and continue production if the amount left over after payment is sufficient to cover variable costs for materials, labor and the like.
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> We could also add the sunk cost problem to the analysis. If the potential licensee is already in the business and has invested in assets whose value depends entirely on the continuation of the business, it is in a difficult position. This potential licensee may no longer make a

depend on the time of the negotiation and the parties' options at that time, which in the case of a potential licensee are limited by its past actions.[23] There is nothing new or even unusual about this situation. This is a situation that has been dealt with by people working under the patent system since time immemorial.

2. The "Hold-up" Characterization Is Not Helpful

Before discussing how the law should deal with this situation, it is probably useful to discuss how not to go about identifying the best legal rule. To say that someone is "holding up" someone else implies that this conduct should be stopped and certainly not rewarded.[24]

While I have used "hold-up" to refer to this problem, it does not aid analysis to say that a patent owner is "holding up" a potential licensee by negotiating the best royalty given the licensee's situation. Nor would it be helpful to say that a potential licensee is "holding up" a patent owner by negotiating the best royalty given the patent owner's situation, which is that the patent owner has already invested in making some invention (and those costs are sunk and product-specific to the hilt). Likewise, we learn nothing by saying a producing company is holding up a patent owner without the assets needed to make and sell products. Producing companies negotiating with patent owners lacking the resources to make and sell products obtain lower royalties due the enormous costs the patent owner would have to incur to switch from being a licensing company to a producing company large enough to supply efficiently all potential customers.[25] The patent owner's costs of becoming a supplier for the customers of a potential licensee reduce the royalties the patent owner is able to obtain in the same way a potential licensee's product-specific sunk costs may increase them. It does not help in deciding what, if anything, the law should do in those situations to say the patent owner is holding up the licensee in the sunk cost situation or the licensee is holding up the patent owner in the other.

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credible threat to switch to an alternative, and an injunction against use of the committed assets may destroy their value. This potential licensee may pay much more for a license than one with other options. This potential licensee may pay an amount that minimizes future losses.

[23] See e.g., John W. Schlicher, Licensing Intellectual Property, Legal, Business and Market Dynamics, John Wiley & Sons (1996), chapter 1, p. 20:

> The important point is that the price for the license will depend on the time of the negotiation and on which party will bear future costs. The price for the license will not depend on the amount of past (that is, sunk) costs.

[24] Armed robbery is a hold up problem. Patent licensing is different, because there is no coercion. A potential licensee may always walk away without surrendering its money.

[25] Nor does it seem to me to help analysis to observe that potential licensees will often have difficulty identifying patented inventions, any more than it would help to observe that patent owners will often have difficulty identifying companies thinking about using their patented inventions.

For purposes of public policy, a hold up problem arises when two companies make an agreement to work with each other in some way and they set the price or the term of the agreement for a limited period.[26] One company then makes large investments whose value depends on the continuation of this relationship and on which that company will earn a sufficient return only if the relationship and the price stay the same for a longer period than specified in the agreement. In this context, the investing party has placed itself in a position to be held up by the other at the time for a negotiation extending the term of the agreement or setting the price for the longer period. The other company is then in a position to negotiate concessions from the investing company that reduce the returns to those investments. The result is a transfer of money from the investing company to the other. The problem may also prevent valuable investments in the first place if the investing company anticipates the problem and decides not to proceed for that reason. This causes real economic harm. The hold-up problem is discussed to help businesses better design agreements or decide on asset ownership to avoid the problem, not because it requires the law to intervene when they fail to do so.

This hold-up problem has nothing to do with a patent owner and an infringer who had no dealings with each other. If, of course, the patent owner had indicated to an infringer in any way before the infringer made the troublesome investments that owner consents to use of the patented invention and the infringer goes forward on that basis, the law says the owner has granted the infringer a license. The infringer is protected from being held up, because the patent owner may not prevent the infringer from selling. The license may or may not bear royalties depending on the circumstances. If a patent owner says to an infringer that it will not assert an infringement claim against the infringer before it invests and the infringer relies on that statement, the law says the owner is estopped from obtaining any remedies for the infringement. In this situation, the infringer obtains a free license. In these ways, the law already deals effectively with patent owners who do something to put invention users in difficult positions and then try to take advantage.

If a patent owner did nothing to cause an infringer's dilemma, the law is that patent owner has the same rights against this infringer as it does against all others. If the law were otherwise, infringers would acquire the ability to be free of patent rights and remedies by making these types of investments before the patent owner could find out about them and assert its rights. The "hold up" problem would work in reverse – the patent owner would be "held up."

3. The "Hold-up" Problem and Non-Producing Patent Owners

The FTC's 2003 report talked about the "hold-up" problem in the context of patents owned by companies that do not make and sell products. The report described how so-called "non-practicing entities" could employ a "hold-up" strategy without fear of retaliation by claims of infringement by the firm they are trying to license. The report spoke about how a "hold-up" can cause harm, because "obtaining a license after costs have been sunk will result in a higher royalty to the NPE than if a license were negotiated prior to the sinking of costs." The report

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[26] See e.g., Paul Milgrom and John Roberts, Economics, Organization and Management (Prentice Hall 1992).

said "[o]ne reason for this higher royalty is that PPEs [practicing entity] obtaining a license under threat of hold-up typically do not have the option of designing around the patent the NPE asserted, because redesigning a product after significant costs have been sunk is usually not economically viable."

The "hold up" problem has nothing to do with who owns the patent. A patent owner that is making and selling products has exactly the same incentives as a "non-practicing entity" to negotiate a price that takes advantage of an infringer's sunk cost predicament. The report's description of the problem in relation to "non-practicing entities" is probably what misled Justice Kennedy to write about the situation "now arising" of companies making money primarily by licensing for whom an injunctions is useful to negotiate "exorbitant" royalties.

4. The "Hold-up" Problem and Component Patents

Justice Kennedy also mentioned an invention covering a small component of a product. The problem created by product-specific sunk costs is not limited to inventions directed to small components of larger products. Product-specific investments may be large when an invention relates to a large component of a product, a small component, or an entire product. They may also be small. For example, a producer may be able to incorporate a small patented component into a patented product without investing anything in product development or manufacturing equipment. If the need for a license arises, the infringer may be able to cheaply replace the patented component with the next best non-infringing component. Where these investments are small, the problem is small. Where product-specific sunk costs are large, the problem is large. In all events, the problem is not confined to patents on small components.

5. The Problem of Product-Specific Investments and Assets

Put aside the semantic problems and the pointless distinctions between producing and non-producing patent owners and small or large components. The difficult issue is whether an injunction should be denied where it is clear that it is in the patent owner's interest to grant the infringer a license and in the infringer's interest to operate under a license and the sole issue is whether an injunction would distort the amount of the royalty in an undesirable way. The potential distortion is that an injunction would permit a patent owner to negotiate a higher royalty due to an infringer's product-specific investments. It is difficult to decide what do, because if an injunction is denied to prevent this distortion, all of the disadvantages arise from judicial control of licensing and repeated lawsuits in which the patent owners capture the value of inventions through damage awards. Trying to solve one problem seems to necessarily create the other. Denying an injunction appears to have the advantage of preventing inventions from having too high a value. However, denying an injunction has all the disadvantages that lead to inventions having too low value.[27]

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[27] There are two other reasons for caution. If this situation would arise only in very rare cases, the problem would be less important. However, I believe that this problem arises more often than one might expect. For that reason, the effect of a rule that a patent owner be denied an injunction in every instance where this occurs could control a very large percentage of patent

In my view, the potential problem is that if a patent owner and potential licensee negotiate a license before the licensee has made product-specific investments and it is in the patent owner's interest to license this company (meaning that royalties are based on value of invention when used by the licensee), the royalty will be no larger than the difference between licensee profits using invention (where profits are net profits) and licensee profits using the next best alternative (again where profits are net profits). If a patent owner and potential licensee negotiate a license after the licensee has made product-specific investments (where it is in the patent owner's interest to license this company and royalties are based on value of invention when used by the licensee), the royalty will be no larger than the difference between licensee profits using invention (where profits are net profits plus product-specific fixed costs) and licensee profits using the next best alternative (where profits are net profits).

The higher royalty is not necessarily a cause for concern merely because of the income transfer from producer to patent owner. The higher royalty is cause for concern because it may seriously and adversely affect the incentives of patent owners and producers in the future.[28] Patent owners would have incentives to wait until after a producer makes the investments before informing the producer of the patent and the issue. There is also the risk is that potential patent licensees and patent infringers will refuse to license or will decide to infringe at the time they are thinking about using some invention, if they are confident that by the time a court reaches the issue of a permanent injunction, their high product-specific investments will cause the judge to deny the injunction and either impose a license on terms the judge decides or allow the infringer to continue use subject to future damages liability. The law may lead to the problem arising more often than it should. Quasi-inventors would have increased incentives to file or amend patent applications solely to extract money from producers, an economically useless activity.[29]

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situations. Application of such a rule could significantly reduce the value of a large percentage of inventions with the result that people doing real R&D would perceive that a large percentage of potential inventions are not worth trying to make. In addition, if I am correct that the problem is not new, patent owners and infringers have somehow been able to work out its solution in the past.

[28] The distortion is not what Justice Kennedy appeared to perceive, namely that an injunction will always lead to undesirably higher royalties when the patent owner wishes to license.

[29] Other patent doctrines should be used to prevent what is perhaps a significant cause of the current debate over patent damages and injunctions, namely the patenting, licensing and litigation activities of people and firms that do no real research and development. In my view, the patent system is justified, because there is good reason to believe that rate of investment in risky research and development projects would be undesirably lower if patents were not available. However, many people and firms obtain patents on inventions that were not the result of investment and risk-taking in research and development. Some people and firms obtain patents on inventions in which they invested little time and no money doing real research and development. These inventors simply sit at word processors and write patent applications describing inventions they have thought up and never actual built or tested. They risk nothing in the enterprise other than their time and their costs of patenting. The technical information in the patent applications is only as valuable as the theoretical technical expertise of the writer,

Producers would have incentives to delay investments in new products until all possible patent issues have surfaced, considered and addressed. Producers would also have increased incentives to forgo investments in new products to avoid the problem entirely. Both effects would cause enormous economic harm. In answering that question, we must keep in mind that the answer will not simply govern licensing after judgment in litigated actions. The result will govern licensing in all situations, because the parties' perceptions of the likely outcome of an infringement action are one of the two main factors that determine whether licensing occurs and the amount of royalty payments. If an injunction will issue after litigation, the parties have incentives to negotiate a price based on the future economic value of the invention as perceived by the owner and the potential licensee. If an injunction will not issue after litigation, the parties have incentives to negotiate a price based whatever price they believe the court will impose if they fail to agree. Even without litigation, a potential licensee will pay no more for a license than the costs it will bear after an infringement action. Assume a potential licensee believes that, if it makes invention specific investments and begins selling a product without a license, a court will permit it to continue selling by denying the patent owner an injunction and will set a royalty for further sales that permit it to earn an adequate return on those investments. The potential licensee will not agree to pay a patent owner a larger royalty for a license. The price the parties expect the court to set will control. The parties' views of future economic value of the invention will not control.

Before proceeding, it is helpful to be a precise as possible about the nature of this problem. Patent infringers usually have sunk costs. They have a plant, equipment, marketing and service organizations, and so on. Potential licensees (who are also potential infringers) also usually have sunk costs. Those past investments are why those entities may often produce larger profits from use of inventions than patent owner. The invention is more valuable when used by those entities than by patent owners precisely because those entities have invested in these assets. The mere existence of infringer sunk costs is not the problem.[30] If injunctions are denied

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sometimes very valuable and sometimes mere guesswork. Sometimes, the claims of these patent applications are changed to attempt to encompass actual or potential commercial products or processes about which the inventor learned after filing the application. Sometimes, the inventors try to keep the patent application process going as long as possible to permit it to make these changes, when commercial products and processes appear. In my view and speaking only in general, this is not sort of activity that patent law exists to encourage, because it provides so little real benefit relative to its private cost. There are ways patent law could better deal with this situation other than by limiting remedies for all inventors. The Patent Reform Act does none of them and indeed could make the problem worse by assigning patent rights to the first person to file a piece of paper with the Patent and Trademark Office rather than the first person to actually design, build and test some product or process.

[30] Notice that no one sees anything wrong when patent owner sells a product, has lost profits, an infringer is ordered to pay the patent owner lost profits measured by price minus patent owner incremental costs. Infringers routinely pay a patent owner's lost gross profits. After that payment, infringers bear their sunk costs plus pay the patent owners sunk costs. The damages award leaves such an infringer worse off than an infringer with sunk costs facing an injunction and a higher royalty.

because an infringer has sunk costs, injunctions will usually be denied. The exception will have swallowed the general rule. The only sunk costs that matter for this purpose are those used to produce assets that that may not be used, if the investing company must sell a different and non-infringing product or no product. If the company could use most of the product and process designs developed for use with the patented product, and all of the facilities, equipment, customer information and good-will in supplying the alternative non-infringing product (that is, they are not product specific), the price the firm will pay for a license to use an invention will not be higher.

I also believe it is necessary to limit the product-specific investments in one additional way. A firm may have made product-specific investments because they were needed to incorporate a particular invention in a product. These investments may be called "invention specific," because the product and process development, production facility, equipment, and materials, marketing and product support, and regulatory costs were needed to use this particular invention in a product. For example, if the invention is a new patented chemical useful in treatment of some disease, production and sale of a pharmaceutical product requires a large investment in product development and testing both to satisfy the producer and its potential customers that the product will help patients recover from the disease and will not cause other unacceptable side effects and to also satisfy government regulators that the product is safe and effective.[31] These costs are likely to be product-specific because the information and data on this chemical is unlikely to be useful if the producer sells some other chemical. However, these costs are simply one type the necessary cost to use this particular chemical. These costs define the value of this invention compared to alternative inventions. If a patent infringer has made these investments and an injunction is granted, the patent owner will likely be able to negotiate a higher royalty than it would have been able to obtain before these investments. Nonetheless, this is not a reason to deny an injunction, because this is precisely the situation in which a patent owner will want and need to control who produces and sells this product and an anticipated denial of injunctive relief will prevent that control. Instead of the producer going to the patent owner early to offer to make these investments and negotiate a license, the producer will have incentives to proceed without a license, confident that the courts will protect its investments.

The types of product-specific investments that have the potential to cause harm are those that have nothing to do with the nature of a particular invention. In many industries, firms are not be able to change their product at point in any time, because product development costs, production process development costs, and production material and equipment costs need to make any product are very large relative to sales over some period of time. In order to make a profit, the firm must sell the same product for a long enough period of time to recover the costs of those investments and earn a return on them that justifies staying in the business. Such firms may not simply change to a non-infringing alternative product even if a perfect one is available. For these firms, all such investments are "product-specific" in that the product may not be changed at all. However, the reason has nothing to do with the value of any particular

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[31] By using an example from the pharmaceutical industry, I do not mean to imply that this situation is unique to that industry. Many industries require large fixed costs fro efficient production.

invention.[32] An invention that adds little or nothing to the value of the product poses as much of a dilemma as an invention that adds much. If a firm has made these investments and an injunction is granted, the patent owner will likely be able to negotiate a higher royalty that reflects nothing about the value of the invention and reflects only the nature of the business the firm conducts. At present, this seems to me the only situation for an exception to general rule favoring an injunction.

Identifying the problem is easier than identifying the solution. This is my current view on the solution. This "solution" violates the principle that good law tends to be simple and bad law tends to be complex. By that principle, this may be bad law.

An injunction should be granted unless five conditions are satisfied.

(1) It is without doubt in the patent owner's business interest to grant the infringer a license and in the infringer's interest to accept a license at a payment rate equal the economic value of the invention when used by the infringer. There is no way the patent owner could make more money if it or someone else used the invention and the infringer did not. A judge should deny an injunction only when the judge is absolutely confident that it would be in the patent owner's business interest to grant the infringer a license and in the infringer's interest to accept a license at a payment rate for each year equal to the difference between the net profits the infringer makes from selling the product (including the amortized costs of product-specific investments) and the net profit it would have made selling the next best non-infringing product (including the costs of product-specific investments for the alternative) it would have sold if it had adopted that alternative at the time before it made its investments in the infringing product.

Granting the infringer a license is in the business interests of the patent owner only when the patent owner will earn larger profits by permitting this company to use the invention at that payment rate than the patent owner or another licensee (existing or potential) could earn by using

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[32] For example, suppose an invention improves one component of a product or provides a new component that adds to the value of a product. There may be several ways to include the patented invention in the product. If changing a product to incorporate that invention does not require changing any other components or the manner in which components interact and the lowest cost way of making the product is to build components separately and plug them into a board on the product, the costs of switching from a component having one invention to an alternative may be very low. However, those costs have nothing to do with the nature and value of those inventions. They have to do only with the general nature of the product and how it is produced. If, conversely, changing a product to use some invention does require changing other components and the manner in which components interact or the lowest cost way of making the product is to build all the components into an integrated, unified product (so that components may not be removed and replaced separately), the costs of switching from a component having one invention to an alternative may be very high. Again, that fact may have nothing to do with the nature and value of the invention; it has to do only with nature of the products to which the invention relates and how those products are made.

the invention.[33] The reason for this requirement is to prevent the problem from working in reverse and reducing the value of investments made or planned by a patent owner or another licensee or set of licensees. In many situations, the most profitable way to exploit some invention is to have a single supplier or a limited number of suppliers. Patent owners must have injunctions to be able to do so.

The fact that a patent owner may have granted one or more licensees to other companies does not mean that it is in the business interests of the patent owner to license another company. Patent owners make difficult decisions about what companies and how many to license to supply a given set customers so that there is competition among licensees and yet not so many licensees that none has the ability to operate the most efficient scale or the incentives to make the investments need to develop the business and properly serve the customers. Those decisions should not be second-guessed by courts.

The issue is whether it is in the interests of the patent owner and the infringer that the infringer continue use and make appropriate payments at the time of decision on the injunction. However, it might also be useful to ask whether it would have been in the interests of the patent owner to grant the infringer a license before the infringer made its investments in the infringing product and in the interests of the infringer to accept, assuming of course no uncertainty about validity or whether the infringer's activities would be infringement. If it would not have been in their interests at that time, it may not be in there interests at the time of the injunction decision.

(2) The infringer made large investments because it was necessary to do so to produce any product and not merely to produce the patented product. Those investments are so large that they must be recovered (with an adequate return on investment) from sales revenue over a significant period of time. Those investments are also large relative to the value of the patented invention. An injunction should be denied only where the infringer has made investments that are necessary to produce and sell any product and those investments were made to produce assets having little or no value if the infringer must make any significant change to the product or production process. Those investments are in a sense specific to any feature of the product or process and not merely specific to the patented feature. The investments of the infringer are product-specific and not invention-specific. These costs have nothing to do with the fact that this patented invention is in the product. An injunction would allow a patent owner to capture value having nothing to do with the value of the invention only if the infringer has made investments in such assets.

An injunction should be denied only where the infringer has investments at risk that are so large that they must be recovered (with an adequate return on investment) from sales revenue over a significant period of time. The investments at risk should be large enough that they must

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[33] For this purpose, the pertinent profits are gross profits if the owner or other licensee is already using the invention and especially if patent owner or other licensee has made product-specific investments. These profits should perhaps be gross profits even if patent owner or other potential licensee is not yet in business and would supply the infringer's customers and markets if they were.

be recovered with a return over a long period of time and product changes are not practical during this period. Infringer simply cannot change the product in a way that would stop infringement, because the value of much of its product and process development and manufacturing and marketing investments depends on making no changes for a long time.

These investments should also be large relative to the value of the invention. In other words, the difference between net profits from selling products with the invention and net profits from selling the next best substitute should be small relative to the amortized costs of the product-specific investments. While I have no formula for all situation, the concept is that an injunction might be denied where a product sells for $100, this difference in profits (and the value of the invention) is $.50, and the per unit costs of the fixed product-specific investments that would be rendered valueless if the infringer had to switch are $20 per unit when amortized over the normal period for cost recovery (plus a return to that investment). In that situation, the potential for over-reward is very large and the potential for discouraging companies from making investments for fear of patents is large. In this situation, it is also unlikely that the infringer made these investments simply to prevent an injunction and so that it would obtain a cheaper license than the patent owner would have be willing to grant.

(3) It is clear that the payments made to the patent owner during the period no injunction is in place will be equal to the full economic value of the invention at the time of sales (and not based on the damages award rate). An injunction should be denied only where it is absolutely clear that the amount the infringer will pay during the period no injunction is in effect is equal to the economic value of the invention that the infringer is capturing. An injunction should not be denied with the hope the post-denial result adequately rewards the patent owner. An injunction should be denied only when it is clear that the infringer will pay the patent owner the full economic value of the invention during the period no injunction is in effect. The amount of damages does not necessarily reflect that value. Continued payment at the damages rate should not be the basis on which to deny an injunction.

The payment rate for each year should be the difference between the net profits the infringer makes from selling the product (including product-specific investments) and the net profit it would have made selling the next best non-infringing product it could and would have sold if it had adopted the alternative at the time before it made its investments in the infringing product. The payment rate should not cause the problem the rule is designed to avoid. Ideally, there should be an annual determination of the future economic value of the invention and a patent owner should not be not limited to the value the invention had during the period of infringement. Ideally, the payment rate for a future period should be set in advance so that the infringer prices its product in a way that reflects those patent costs and does not distort the profits of the patent owner or another licensee. Those two goals are somewhat at odds and may be achieved only by periodically setting a payment rate for a short future and adjusting payments made in the past based on actual experience.

(4) There is no evidence or reason to believe the infringer made the investments to prevent an injunction. An injunction should be denied only where there is no evidence or reason to believe that the infringer made the investments knowing that it was a virtually certainty that its activates infringed a valid patent and went ahead to defeat the injunction and obtain a license from a judge. This part of the suggested rule is a final check for people trying the game the rule.

Again, the purpose is to prevent the problem from working in reverse by inducing companies to make product-specific investments and not address the patent issues in advance to obtain a license or a payment rate from a court that the patent owners would not grant or accept.

(5) The period of denial is no longer than absolutely necessary. When an injunction is denied, the period of denial should be no longer than necessary. An injunction should take effect at the earliest possible time, namely the earliest time after which the infringer has recovered from sales its investment in the product-specific investments that justified the denial (an amount that should be specified at the time of the denial order) or the earliest time when the infringer could in the normal course of its business redesign the product and do the necessary changes to production and marketing and regulatory matters to switch to an alternative non-infringing product.

6. The Related Problem of Demand Side Scale Economies

There is another related problem. There are some situations where switching from one product to another would be impossible, even though doing so would not render product-specific investments valueless. This could occur where a particular product has become valuable to consumers due to demand-side scale economies usually called network effects. There are reasons a product may become more valuable to some consumer as more and more other people use it. This increasing value with scale of use may have nothing to do with the particular technology used in the product. If a product has a feature that is necessary for the product to have value to consumers because of network effects and that feature requires use of a patented invention, a particular company selling that product at some point in time may not be able to switch to a non-infringing alternative product, even though the costs of doing so would be acceptable. In this setting, a similar approach may be useful. The manner of determining the payments to the patent owner during the period no injunction is in effect would have to be different.[34]

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[34] In those situations, the economic value of a patented invention to an infringing company should be the profits available from using the invention in a product minus the profits that the company would have earned using the next best substitute product, assuming that the patented product and the substitute product was used by enough consumers to provide the product with the value following from network effects. In other words, if at any point in time, a product with a patented invention and a product using the next best substitute feature could have been used by consumers in ways that would provide the value derived from network effects, the law would determine the value of the patented invention by comparing the value the patented product had when it was, for example, widely used by many to the value the next best product would have if it were also being used at the same time by many. If both products were suitable for use as formal industry-standard products (based on the need for interoperability) or as so-called "de facto" standard product, the economic value of the invention would be the difference in profits from using the patented product as the standard product and the profits from using the next best alternative as the standard product, even though it would as a practical matter not have been possible for some accused infringer to shift to the alternative product.

7. The Best Solution – Create Conditions that Permit People to Avoid the Problem

The best answer is to prevent the problem from arising as much as possible. Make information about patents available as quickly as possible. Publish patent applications the day they are filed.[34] Limit the time for prosecuting a patent application for some invention, perhaps by eliminating continuation applications. Limit the incentives for amendments to the claims of applications that are based not on better defining the invention described in the application, but on changing the legal definition of the invention to enable assertion of infringement against a product or process the patent owner or its attorneys learned about after the application was filed. Require patent owners to bring infringement actions promptly after they learn about infringement. Permit patent owners and users to discuss business arrangements about patents without the risk that those discussions will enable potential licensees to start a lawsuit. Permit patent owners and potential licensees to agree to royalty arrangements that may be enforced without litigating patent issues and to do so without first filing a lawsuit. Create remedies that allow patent owners to capture the full economic value of their inventions and no more. Make clear that injunctions are the preferred remedy so that potential licensees do not have incentives to use district judges to grant them licenses rather than patent owners. Until we do those things, this problem will arise more often than necessary.

IV. Damages

The notice asks about damages. These comments have three parts. The first part discusses briefly whether there is a problem with patent damages and any evidence of the nature and extent of the problem (section A.). The second discusses the proposed amendment to section 284 in the Patent Reform Act, Senate bill 1145 (January 24, 2008 version) and Senate bill 515 (March 3, 2009).[35] (section B.) I discussed this proposal in more detail in a paper published earlier this year.[36] The FTC's hearings indicate that the agency in interested in more than the proposed legislation. Hence, the third describes some of the current problems with damages law and my suggested changes (section C.).

A. The Nature and Extent of the Damages Problem

Patent law on damages has many features that prevent damage awards from consistently and predictably approximating the economic value of patented inventions that patent law wishes

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[34] This would require changing the way the applications of some inventor or some company affect the patentability of related inventions by the same inventor or the same company.

[35] This bill is described in Senate Report 110-259 of the Committee on the Judiciary also dated January 24, 2008. The following discussion assumes familiarity with this bill and this report.

[36] John W. Schlicher, *Patent Damages, the Patent Reform Act and Better Alternatives for the Courts and Congress*, 91 Journal of the Patent and Trademark Office Society 1 (2009)("*Patent Damages*").

patent owners to capture. I will describe the problems with the law in later sections.[38] While there are occasionally cases in which it seems plain that the damage awards are larger than the economic value of some invention, it is not possible say that is happening in a significant percentage of cases. That said, much of the law on patent damages obscures the effort to match damage awards to the economic values of inventions. Much of the law governing compensation not less than a reasonable royalty is almost useless in arriving at an award in a particular case that approximates the true economic value of an invention that a patent infringer captured or the patent owner lost as a consequence of the infringement. So there is a problem.

I collected some empirical evidence on damages based on data the clerks of the United States district courts report to the administrator's office from 1987 to 2000. There are problems with how this data was reported. However, even if you adjust the data based on the findings of a study of actual court records, the mean and median damage awards each year during this period are quite modest relative to likely litigation costs.[39] If any group is systematically profiting from litigating patent actions for damages awards, it is far more likely lawyers than patent owners.

Of course, one must be cautious about drawing conclusions from data on litigated actions. Judgments in litigated actions are a small percentage of total actions filed (something on the order of five percent) and a tiny percentage of total patents involved in licensing and settlement of disputes without litigation.

Observed damages awards in judgments are unlikely to be a random sample of total situations in which anticipated damages have economic consequences. People litigate patent infringement actions for reasons other than damages. Putting aside actions in which an injunction is valuable to a patent owner, the most likely explanation for apparently "low" observed damages awards is that patent owners do not decide whether to litigate a patent action based only on the value of the remedies in that action and the costs of litigating that action. A judgment in one patent action has wider consequences. I described them elsewhere.[40] Patent owners will litigate actions in which they expect to earn little or no profits from the remedies in those actions to obtain future profits they expect to earn when others license or avoid infringement due to the patent owners' winning those actions. Patent owners will also settle actions in which they expect to earn large profits from the remedies to avoid losing future profits when others stop paying royalties or start infringing due to the patent owners losing those

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[38] This discussion is based on John W. Schlicher, *Patent Law: Legal and Economic Principles* (West Group 1992, Second Edition 2003, latest supplement 2008), chapter 9, chapter 13, §§ 13:129 to 13:172. The *Patent Damages* paper describes the problems with so-called reasonable royalty damages (§ VI).

[39] I have described that data in an unpublished paper. John W. Schlicher, *Settlement of Patent Litigation and Licensing Patents, Part 3, The Empirical Data on Patent Litigation and Settlement* (2009).

[40] John W. Schlicher, *Settlement of Patent Litigation and Licensing Patents, Part 1, The Facts and Relationships that Influence Decisions to Settle and License* (2009).

actions. Both effects would contribute to observed low damages in litigated cases. Accused infringers may also litigate actions in which the cost of remedies is low to obtain future benefits from a judgment based on a successful defense to obtain future benefits of fewer actions by others against them. This would also contribute to low observed results. There are other possible explanations of why there is so much litigation given relatively low observed damages.

Finally, one should be cautious about drawing inferences about the economic impact of damages standards based on data about median and mean awards. During the period 1987 to 2000, the mean award was about twice the median award based on the data reported by the clerk's offices. With a necessary adjustment based on a review of actual court records, the mean award was five times the median award. This confirms what we know from experience and without this data; patent damage awards are not distributed evenly on both sides of the mean award. The distribution of damages awards is positively skewed, meaning there are relatively more cases falling below the mean and relatively fewer above the mean. Said differently, there are many relatively small awards and few relatively large awards. As with the value of inventing generally, it is the few very valuable inventions that account for a large percentage of the total value of inventing. The danger of making too much out of data on median and mean awards is that those awards tell you very little about the awards that matter most, those for the very few very valuable inventions.

B. The Damages Proposal in the Patent Reform Act

There are many problems with the law of patent damages. The Patent Reform Act bill addresses four problems. I discuss three of them. I largely ignore the fourth, patent marking under section 287.[40]

1. The Problems with Reasonable Royalty Damages Underlying the Proposal

The main premise of these amendments is that reasonable royalty damage awards frequently exceed the economic value of patented inventions.[41] 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

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[40] I would eliminate the marking requirement. Marking is an anachronism. This requirement was created for a world in which it was very expensive to learn about the patents of others and a good way to provide that information was a notice on a product or a package. Today, people have inexpensive ways to learn about patents and the primary result of the marking requirement is to limit patent damages in situations where it is difficult or impossible to mark a product with the patents embodied in the product. Little or nothing is gain by the marking rule and much is lost.

[41] *Patent Damages* §§ II and III.

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.

2. 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. [42]

3. 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.[43] 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 sometimes played relatively 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 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.

4. 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.[44] When applicable, the amendments require that "...the court shall conduct an analysis

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[42] *Patent Damages* § IV.A..

[43] *Patent Damages* § IV.B.

[44] *Patent Damages* § IV.C.

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.

5. 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.[45] With some refinements, 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 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 obscure its significance. 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.[46] 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

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[45] *Patent Damages* § IV.F. and VII.

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

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 increase of efficiency or saving of expense."[47]

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.[48] 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.

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.

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

[48] 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.").

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.

6. 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."[49] 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.

7. 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.[50] 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.

8. 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

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[49] *Patent Damages* § IV.D.

[50] *Patent Damages* § IV.E.

award.[51] 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.

9. An Alternative Amendment

If legislation is necessary, I suggest amending Section 284 to read as shown below. The meaning and purposes of the changes are described in the paper.[52] These amendments address the problems that prompted the S. 1145 amendments and deal with some other problems. The paper also describes additional changes to address additional 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.

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[51] *Patent Damages* § IV.G.

[52] *Patent Damages* § VII.

10. Increased Damages and Willfulness

The paper mentioned above also addresses the problem of willfulness and increased damages.[53] I will summarize part of that discussion here. I do not support enacting the provision on willfulness in the Patent Reform Act.

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.[54] 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.

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 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. 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

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[53] *Patent Damages* § V.

[54] 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.

detected or no action would be brought. 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 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, 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).

Since it is unclear to me whether that is the meaning or will be the effect of the *Seagate* standards, is unclear to me that those standards are the best available.

The law does not say how much damages should be increased, when an increase is appropriate. Where it is, 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 there is a probability less than 1, call it p, that damages in the amount D would be awarded for one of the reasons mentioned earlier. If p is less than 1 for one of those reasons, 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.

C. Other Problems in the Law of Patent Damages

There are many other problems in the law of patent damages. I have described those problems elsewhere.[55] 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 problems in no particular order. I omit the problems discussed earlier. The amendment to section 284 I have described is

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[55] *Patent Law* §§ 13:133-13:165.

designed to correct most of these problems sometimes by language and sometimes by the explanation of what the language is intended to accomplish.

1. 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.

2. Reliance on Historical Prices, Quantities, and Profits

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.[56]

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.

3. 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.

4. 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

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[56] 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.

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.

5. 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.

6. 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.

7. The Effect and Value 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.

8. The Effect and Value 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.

9. 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.[57] In 1895, the Supreme Court said, if there was no established fee and "no impairment of the plaintiff's market," there was no damage and the owner was entitled only to nominal damages.[58]

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.[59] 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."

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[57] *Patent Law* §§ 9:61 - 9:63.

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

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

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.[60]

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 highly uncertain, the actual award could be reduced to reflect this uncertainty.[61] 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

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[60] 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."

[61] 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.

must show what on at least apportionment.[62] 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.[63] 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.

10. The *Panduit* Formula

Perhaps the dominant legal standard governing an award of lost profits over the last 20 years has been the Sixth Circuit's *dicta* in *Panduit*, where the court announced a four-part test for proving lost profits in the course of writing an opinion in an action in which damages were not measured by lost profits. The *Panduit* formula is terse and does little to assist in identifying a situation in which there is a reasonable probability that, but for the infringer's infringement, a patent owner would have made additional sales and additional profits. Nonetheless, the courts for a time felt compelled to apply the *Panduit* formula. In my view, the efforts to apply that formula have largely been unfruitful. The courts seem to have recognized the limits of *Panduit* by making clear that that formula is not the only way to establish lost profits. Nonetheless, the *Panduit* test continues to play a more important role in lost profits damages than it deserves.

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

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

11. Split Awards

Since the 1980's, the courts have embraced the notion that a patent owner is entitled to recover some amount of money on each unit that an infringer sold. There is nothing in the Patent Act, or insofar as I am aware, in the prior damage decisions that requires the courts to do so. The effect of this approach is, in many cases, to award damages so that a patent owner obtains more from the profits on the sales it makes plus the damage award than it would have made had there been no 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. This occurs because infringement may have the effect of lowering the price and increasing the quantity sold. For example, assume that absent infringement, a patent owner would have sold 100 units at $250 per unit and earned profits of $100 per unit (and total profits of $10,000). One company infringes, price falls to $200 per unit, and the combined sales of the patent owner and infringer increase to 180 units (the patent owner and infringer each selling 90 units). The patent owner may recover lost profits equal to $50 times 90 units (lost profits from price erosion), and $100 times 10 units (lost profits from lost sales at pre-infringement prices). This amount places the patent owner in the same profit position it would have been absent infringement. If the law goes further, and insists that the patent owner recover something on the 80 units of sales by the infringer seemingly omitted from the lost profits calculation, such as a royalty of $50 per unit times 80 units (and additional $4000), the patent owner is much better off financially than it would have been in the absence of infringement.

In order to avoid that result, damages based on split awards must be confined so that the total quantity of infringing sales on which damages are awarded, plus the sales the patent owner made, does not exceed the quantity of total sales absent infringement.

The courts have begun to apply general principles that may ultimately lead to the elimination of this feature of split awards. When the courts say that damages should award to patent owners the amount of the value of those inventions that patent owners would have captured absent infringement by anyone, this principle would seem to preclude a patent owner from receiving more. However, the courts have yet to apply that principle in that way or to seriously question the appropriateness of split awards.

12. The *Grain Processing* Approach to Identifying the Value of an Invention

In determining lost profits, the courts have recognized that the value of a particular invention is the difference between the profits made available from use of that invention in making and selling products, and the profits available from use of the next best, publicly available, non-infringing substitute invention.

Perhaps, the most important recent example is *Grain Processing*. In *Grain Processing*, the Court of Appeals applied this concept to deny a patent owner any lost profits damages where an infringer would have sold during the infringement period a perfect non-infringing substitute

product and the sales would have caused the patent owner to lose the same amount of profits that it lost from sale of the infringing product. Instead of lost profits, the patent owner received damages equal to the entire difference between the infringer's cost of producing the product embodying the invention and the somewhat higher costs that would have been incurred to produce a perfect non-infringing substitute. That difference is the value of the invention lost due to infringement.

The Court of Appeals has also made clear that an infringer must have actually possessed the design of a non-infringing product, and may not reduce damages by proving that it could have developed a design of a non-infringing substitute invention during the damage period. This decision is correct, because the value the law seeks to award a patent owner is the actual market value of the invention during the damage period, and that value depends upon the substitutes that were actually available to others, not those that theoretically might have been available to others if they had invested more in trying to develop substitutes.

Three issues remain unclear. The first is whether an infringer seeking to rely on substitute inventions must prove that it would have sold products embodying the alternative invention during the damage period. While the Court of Appeals insist that the design of the device be actually available, and that the infringer show that it had the capability to produce the substitute product, the Court seems to have stopped short of insisting that the infringer prove that it would have switched to that substitute had the patented invention not been available to it. If there is an alternative design, but for some reason, it is not one that an infringer actually would have sold as the second best alternative to an infringing product, it is difficult to understand why that alternative should be regarded as limiting the value of the invention.

A second issue is whether *Grain Processing* establishes a principle to govern situations wherein an infringer had an imperfect substitute, namely one that an infringer's customer might have regarded as different and perhaps less desirable in some way than the infringing product and therefore might have purchased it only at a lower price. There should be no conceptual reason why an imperfect substitute should not limit lost profits damages in the same manner as a perfect substitute, as Judge Easterbrook indicated in one of his opinions. However, it remains unclear whether the *Grain Processing* rule applies in those situations. At least one decision suggests that perhaps that *Grain Processing* does not apply in this situation.[64]

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[64] See, American Seating Company, v. USSC Group, Inc., 514 F.3d 1262, 1270, 85 U.S.P.Q.2d 1683 (Fed. Cir. 2008)("USSC argues that the jury's award of lost profit damages for sales of the non-infringing VPRo II after April 2002 was not supported by substantial evidence. It also argues that Grain Processing created a bright-line rule that the presence of a non-infringing replacement product precludes lost profit damages in all circumstances. However, USSC overlooks that Grain Processing instructs that a non-infringing replacement product is not considered a substitute unless it is "acceptable to all purchasers of the infringing product." Id. at 1343. In other words, buyers must view the substitute as equivalent to the patented device. See id. at 1347.").

Third, there is a conceptual issue about the true basis for the *Grain Processing* approach. The Court of Appeals, like the District Court, felt compelled to try to fit the explanation for the result into the *Aro* language and found that the infringement was not the "but for" cause of the patent owner's lost profits. This finding is understandable if you distinguish the effects of the defendant selling any malto-dextrin product (for which the patent owner should not receive compensation), and the effects of the defendant selling an infringing malto-dextrin product (for which it should). Even though the defendant's sales of the infringing product (the *Aro* "infringement") caused certain lost profits, it is possible to say the infringement was not the "but for" cause of the loss where the defendant would have sold a noninfringing product and caused the same loss if it had not sold the infringing one.

However, the *Grain Processing* result need not be premised on an assertion that the infringing sales did not in fact cause the patent owner to lose profits. The reality is that an infringer sold an infringing product, and those sales caused the patent owner to lose sales and profits. However, the result is correct because an award of the owner's entire lost profits would be greater than the value derived from this invention that the patent owner lost due to infringing use of that invention. In this situation, the invention provided only a small part of the total profits being earned by the patent owner. If the infringer had not used this invention, it could (and presumably would) have sold a non-infringing product that would have caused an identical loss to the patent owner. The courts could have said that the patent owner should only recover the part of the total loss that was attributable to the invention, because the entire market value rule was not satisfied, and some apportionment was required.

The *Grain Processing* decisions did not say that they were applying the entire market value and apportionment rules. However, the *Grain Processing* rule should be regarded as an application of those rules and may be understood to say implicitly that a patented feature may be found to account for a product's entire market value (entitling the patent owner to recover its entire profits from sales) only where the infringer could not have made any sales by selling a product without that feature.[65] The Court of Appeals cited the *Westinghouse* and *Mowry* decisions in which the Supreme Court explained and applied the entire market value and the apportionment rules to determine an infringer's profits, and the *Yale Lock* decision that applied those rules to determine a patent owner's lost profits. The principles are the same in both contexts. As the Court of Appeals noted, and the Supreme Court repeatedly said, these rules require comparison of the profits available from use of the patented invention and the profits available from use of the next best substitute.

13. Use of an Established Royalty to Measure Damages

Until perhaps the 1970s and 1980s, damages were often measured by an established royalty. Well into the 20th century, the Supreme Courts said that, where a patent owner had granted a number of licenses for the same activities that the infringer engaged in, the established royalty was the preferred measure of damages because the royalty showed the market value of

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[65] *E.g.*, Kori Corp. v Wilco Marsh Buggies & Draglines, Inc., 761 F.2d 649, 655-56, 225 U.S.P.Q. 985 (Fed. Cir. 1985).

the invention. While there was some uncertainty about whether an established royalty was a proper measure where some other would result in a larger award, an established royalty was often employed to measure damages. While an established royalty remains an available measure of damages in legal theory, it is rarely applied in practice, and properly so.

There are several reasons established royalties are unlikely to provide an appropriate damage measure in any circumstances. Measuring damages by an established royalty would almost invariably undervalue inventions. When the courts began measuring damages by an established royalty, they did so by observing correctly that market transactions are the best measure of the value of things. However, market transactions in patents will almost invariably undervalue inventions. There are many reasons including the four that follow.

First, a license grants someone the authority to use an invention in the future without being subject to infringement liability. The amount that a potential licensee will agree to pay for the future use is an amount no greater than the lesser of the economic value it expects the invention will have in the future, or the economic costs the potential licensee expects to incur as a result of an infringement action if it proceeds without the license.[66] The expected economic value of an invention at the time a license is entered is likely to be less than the actual value the invention proves to have, because predicting the future always involves uncertainty about future economic conditions and technological changes.

Because the future involves risk, a potential licensee who will bear those risks under an agreement is unlikely to be willing to agree to a payment that accurately measures the value an invention proves to have in the future. For example, if the most rosy predictions about the future would result in an invention contributing on average $30 per unit to profits, and other reasonable predictions project that it would result in only an average of about $10 per unit in additional profits, a potential licensee is unlikely to be willing to pay at the rate of $30 per unit. If it does so, and the rosy predictions do not prove accurate, the licensee may not profitably continue to use the invention under the terms of the original agreement, and must cease doing so.

Second, royalties do not merely measure the economic value of the invention to a licensor or licensee. A person contemplating using an invention has the option to obtain a license or infringe, and a patent owner has the option to license or engage in infringement litigation. A patent owner will grant a license only if royalties are likely to be greater than the economic value of the invention to the owner in the absence of licensing and greater than the risk discounted expected economic value of an infringement action. A potential licensee will accept a license only if royalties are likely to be less than the economic value of the invention and less than the risk-discounted, expected economic cost of an infringement action.

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[66] If injunctions were granted immediately, certainly, and at no cost after infringement began, the value of licenses and the amount of payments for a license would be independent of how damages are measured in litigation. Under certain other conditions, royalties would measure the economic value of the invention to a licensor or, if greater, to a licensee. However, injunctions are not issued with that perfection.

The expected economic value and cost of a patent infringement action depend upon the patent owner's and infringer's perceptions of the likely outcome of litigation. Just as future market conditions are uncertain, the outcome of future patent litigation is uncertain. It is a very rare patent that is 100 percent certain to be found valid in litigation, and a very rare situation in which it is 100 percent certain that a particular activity constitutes infringement. Because the outcome patent infringement litigation is uncertain, the expected economic value and costs of infringement litigation are discounted by the parties' perceptions of probabilities of winning and losing. This means that, when royalties are agreed to in some amount slightly greater than the patent owner's expected value of litigation and slightly less than the infringer's expected cost of litigation, those royalties are highly likely to be less than the actual value of an invention.

For example, assume there is an invention that would permit a potential licensee to earn an additional $30 per unit profits. If the potential licensee proceeds without a license and is sued for infringement, there is a 50 percent chance that the patent owner will prevail. At first approximation, potential licensee will pay no more than $15 per unit for a license (that is, $30 per unit times its probability of losing, 0.5). If a patent owner and potential licensees generally believed that a particular patent owner had about a 50 percent chance of winning the infringement actions, and we observe established royalties for licenses under that patent of $15 per unit, the value of the invention is more likely to have been around $30 per unit (that is, $15 per unit divided by 0.5).

Third, a royalty is deemed "established" only where licenses have been granted to a number of companies, and the royalty provisions of those licenses are the same. If a patent owner licenses a number of companies with the same royalty terms, those terms are likely to underestimate the value of the invention unless it is one that contributes exactly the same amount to the expected profits of the licensed companies that use it. However, if different licensees value use of the invention in different amounts, a uniform royalty term for all of them will understate the value of the invention to some of those licensees. This is so because the royalty terms must be acceptable to the marginal licensee having the least value for the invention. Since the profits different companies make as the result of using some invention are likely to differ, an established royalty satisfying those two legal requirements is likely to understate the value of the invention.

Fourth, once the law says that an established royalty is one measure damages, patent owners and potential licensees (who are also potential defendants in infringement actions) will take that into account in negotiating licenses. Royalties will not be negotiated based purely on economic value. They will be negotiated based upon economic value and parties' perceptions of the impact of the royalty in setting damages in the future litigation. A patent owner and potential licensee will recognize that the amount specified in a license is not only the amount to licensee will pay under the license, but may also be amount the licensee may pay as damages if it terminates the license and infringes. The patent owner will also recognize that an established royalty may set the amount other infringers may pay as damages. The ultimate effect on royalties is difficult to predict. The patent owner has incentives to make them artificially high, and licensees have incentives to make them artificially low.

For this reason, there will be less licensing than there should have been. Under this rule, a patent owner is likely to be less willing to grant licenses at rates discounted based upon the

uncertainty of the likely outcome of litigation, and a potential licensee is likely to be less willing to accept licenses at rates that are not discounted on that basis. This creates an unfortunate and artificial barrier to licensing.

14. The Time and Territorial Limits on Damages

Any definition of the types of injuries for which a patent owner should be compensated should clearly address issues of time and territory. In other words, the law should be able to precisely define the time period for which a patent owner may collect damages, and the geographic area in which a patent owner suffered some loss for which an infringer must pay. This is important regardless of the manner of measuring damages.

Damages should not be based on the value an invention contributed to the production and sale of products prior to the date a patent issued, or after the date a patent expired. It is certainly true that sales of products embodying some invention by someone other than a patent owner prior to the date a patent issues may reduce the demand available for exploitation after the patent issues, if that product is capable of continued use after the issue date. However, sales before the term are not infringement, because the rights existed at that time. Therefore such sales should not be a basis for damages, even though such sales may reduce the value of an invention to a patent owner during the term.

It is also true that an infringer's sales during the term of a patent may reduce the value of an invention that a patent owner captures after the term ends, because the experience and goodwill an infringer gained during the term may operate to its advantage relative to the patent owner after the term. Again, sales by anyone after a patent expires do not violate patent rights. Therefore, injuries to a patent owner's profits after the term due to sales by someone else after the term should not be a basis for damages even though that other person's ability to make those sales was aided to some extent by its activities during the term. The demand for some invention derived from the sale or use of products or processes after the term is available for capture by anyone.

In addition, damages should not be based on the value an invention contributed to the production and sale of products outside the United States. The demand for an invention that United States patent law would properly seek to assure that owners of United States patents capture is the demand for the invention that is derived from the sale of products to United States buyers or users or from the reduction in costs of production by United States producers. Therefore, to the extent that a patent covers some product, the value that United States patent law should award to owners of United States patents is the value of those products to United States buyers and consumers. The value of those products to buyers and consumers in foreign countries is presumably the exclusive province of foreign patent law. This means that a United States patent owner should not be awarded damages based on the value some invention had in foreign countries in some situations where an infringer engages in some activity in United States that the Patent Act prohibits, and that a patent owner may enjoin.

For example, where an infringer makes patented products in the United States, it infringes. However, the infringing making of a product does not reduce the value of the invention to United States buyers and consumers available for capture by the patent owner,

unless an infringer supplies the resulting products to them. If an infringer makes in United States and sells all the resulting products foreign buyers and consumers, a United States patent owner should not be awarded damages based on those foreign sales. To do so permits a United States patent owner to capture the value of an invention derived from foreign demand for products embodying the invention. If United States patents are to permit their owners to capture only the United States demand for some invention, the patent owner in that situation should not be permitted to recover damages based on the value of foreign sales. Likewise, where United States patent law says that it constitute infringement to supply to foreign customers from the United States all the components of a patented product or to supply to foreign customers from the United States some component useful only in making a patented product, the demand for the patented product is the demand of foreign buyers and users. Therefore, while United States law permits a patent owner to enjoin such activities, damages should not be based on the value of sales to such foreign customers, because to do so permits the patent owner to capture the demand for an invention by buyers and consumers outside the United States.

In both of those situations, United States patent law seeks to permit the owner of a United States patent to capture the value of an invention that is derived from the ability to make that invention, or to make all of the components of that invention in the United States, as opposed outside the United States. In those situations, damages should at most be measured by the difference between the cost of manufacturing the product in United States and any larger cost of manufacturing the product outside the United States. That cost difference, if any, properly measures the value of the exclusive right to make in the United States. That same measure would apply to infringement under section 271(f) and damages measured by the difference between the cost of supplying components from outside the United States and from inside the United States.

15. Damages for Activities before a Patent Issues

Perhaps the most harmful provision on damages is section 154(d) of the Patent Act providing the patent owner may obtain damages against any company that made, used or sold an invention after the date an application for patent was published and before the patent issued. That section makes companies liable for patent infringement for activities undertaken before the Patent and Trademark Office decided whether to issue a patent and before any patent rights existed. Under that provision, companies must review all published patent applications of which they have actual notice to determine whether there are claims that, if issued, would be infringed, and try to guess whether the patent office will allow those claims. This is an obligation that can serve only to distort the technology companies employ in their products and deter companies from using inventions claimed in patent applications. This absurd notion entered the Patent Act in the confusion created by the change in the term of a patent in the 1980s.

Patent owners should not have the right to recover damages for activities that occurred before a patent issued. The patent grants no rights until it issues and companies should not be responsible for paying for activities before patent rights arose. Companies that produce products and services should not have to make decisions about whether to produce and sell based on their assessment of whether the Patent and Trademark Office will issue a particular patent and whether the office will issue a particular claim in the form substantially identical to that found in a published application. This section should be repealed.

16. The Inability to Measure Damages by an Infringer's Profits

A major obstacle to sensible patent damages is the inability in recent years to use an infringer's profits attributable to an invention as the damage measure. Today, the courts say there are two measures of damages - the profits the patent owners lost as a result of the infringement and compensation not less than a reasonable royalty. A "reasonable royalty" may be measured in a variety of ways, one of which is an established royalty. This has not always been the case. Until the middle-1960s, there was an additional measure – the infringer's profits attributable to the infringement. This important change occurred in an odd manner.

In 1946, Congress changed the language of the Patent Act. The main impetus for the amendment was to eliminate in patent actions the distinction between actions in law (or as they were called "actions on the case") and actions in equity. However, there were also complaints during hearings on the change that accounting proceedings to determine an infringer's profits in equity actions took too long, were too expensive, and were resulting in awards that were far too large. They were too large due to the difficulty of deciding apportionment and the Supreme Court's declaration in 1912 in *Westinghouse* that, after the patent owner prove the existence of profits attributable to the invention and demonstrated that they where impossible of approximate apportionment, the burden of separation fell on the infringer. However, the meaning of the amended language was far from clear on the point.[67]

After the 1946 amendment, the courts continued for about twenty years to award damages measured by an infringer's profits attributable to the infringement. In the middle 1960s, the Supreme Court in *Aro* said that the 1946 amendment meant that damages may not be measured by an infringer's profits. The Supreme Court's decision did not involve a damage award measured by an infringer's profits, and the Court's statement had nothing to do deciding the case. Nonetheless, the lower courts followed. Most importantly, the United States District Court for the Southern District of New York in *Georgia Pacific* concluded that Congress intended to eliminate the accounting procedure, and the use of an infringer's profits as a measure of damages.

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[67] The Act of 1870 said that in an action on a "bill in equity," the owner was entitled to recover "in addition to the profits to be accounted for by the defendant, the damages the complainant has sustained thereby", and that in an "action on the case," "damages for the infringement of any patent may be recovered." Act of 1870, §§ 55, 59. Section 67 of the 1946 Act provided that "damages for the infringement of any patent may be recovered" by an action on the case and that the court could enter judgment for any sum above the amount found by the verdict "as the actual damages sustained, according to the circumstances of the case, not exceeding three times the amount of such verdict. . . ." Section 70 of the 1946 Act provided that in any case of infringement ". . . the complainant shall be entitled to recover general damages which shall be due compensation for making, using or selling the invention, not less than a reasonable royalty therefor. . . ." The Act of 1946 no longer said that the complainant shall recover ". . . in addition to the profits to be accounted for by the infringer, the damages the complainant has sustained thereby. . . ." However, it was far from clear that Congress intended to eliminate an infringer's profits as a measure of "general damages."

If the language of the Patent Act clearly required that damages not be measured by an infringer's profits, then the courts must follow the legislative command. However, where the legislative command is unclear, it is appropriate for the courts to consider the policy of patent damages in determining the meaning of the damage provision. If the courts had done so, there is no apparent reason to preclude measuring damages by an infringer's profits derived from use of an invention. Proceedings to determine damages in that way are no longer, more expensive, or less accurate than measuring damages by a patent owner's lost profits or some other measure that relies on evidence of an infringer's profits. Moreover, eliminating an infringer's profits as a measure of damages had four harmful effects.

First, under an incentive theory, damages will sometimes be too low unless they are measured by an infringer's profits. As noted earlier, damages should award the value the invention would have had, if there was no infringement by the defendant in a particular case or anyone else, and the invention was used in the manner that would have been determined by private decisions by patent owners, producers, and consumers operating in the absence of violations.

Assume a particular patent infringer is the most efficient and well-placed user of an invention in some use or some market, meaning that it is able to use the invention to produce and sell goods or services so that the profits derived from the invention are greater than the profits the invention would have generated if used by the patent owner or any other company. When that occurs, the value of an invention captured by the infringer is greater than the value the patent owner or some other user of the invention could have captured. Where the value an infringer captured is greater than the value the patent owner lost, compensation implies that damages should be based on the value that an infringer captured. In that situation, a rule which prohibits measuring damages by the profits that infringer earned that were attributable to the invention prevents a patent owner from receiving an award equal to the value the invention would have had absent infringement.

Second, where a particular patent infringer is the most efficient and well-placed user of an invention, an inability to measure damages by the profits that infringer derives from use of the invention distorts incentives to license. This will occur because the amount that a potential licensee will pay depends on how damages are measured. For the period prior to the earliest date the patent owner could obtain an injunction, a potential licensee will pay only the lesser of the commercial value of the invention to it, and the damages it avoids having to pay due to the license. If the measure of damages is less than the actual commercial value of the invention to the potential licensee, there is too little incentive for the patent owner to license, and the little licensing. A patent owner may elect to use the invention itself, and recover its lost profits in the event of infringement, even though use of the invention by the potential licensee is more efficient and more profitable in used by the patent owner.

Third, the inability to measure damages by an infringer's profits will distort ownership of patents. Many patent owners are incapable of making and selling products. A company that does not make and sell products may not recover its lost profits, since it has none. If the courts do not evade the rule, such a patent owner's damages under a reasonable royalty theory are likely to be smaller than they would have been if measured by the infringer's profits attributable to the invention. In that situation, a patent owner may recognize that the value of its patent may be

increased simply by transferring the patent to a company that does make and sell products. The value of the patent will be increased merely because the patent owner will then be able to recover lost profits, and lost profits are likely to be larger than reasonable royalty damages. If a patent owner could recover an infringer's profits, there would be less incentive to transfer patents to companies that produce and sell simply to alter the amount of damages that may be recovered for infringement.

Fourth, because an infringer's profits was the measure of damages in most patent cases prior to the mid-1960s, the conclusion that damages could no longer be measured in that fashion called into question the continued applicability of the damage principles stated in the majority of damage decisions. The courts had understandable difficulty in deciding whether the principles that governed damages based on an infringer's profits also governed damages based on the patent owner's lost profits or a reasonable royalty.

For example, the Supreme Court had developed fairly well understood principles to decide whether damages would be measured by the entire profits an infringer made or only part of those profits. The Supreme Court in *Aro* said that damages were to be measured by the pecuniary condition of the patent owner but for the infringement. Where an infringer sold a product that embodied a patented feature or improvement, but for the infringer's sale of that product, the patent owner would have made profits on its sales of a competing product. If a patent owner is entitled to all the profits that it would have earned but for the infringement, it would seem that a patent owner is entitled to recover its entire profits from the lost sales. While the courts in the 1990's have begun to address this problem by looking to legal principles developed measure an infringer's profits, it should not have been necessary for them to do so.

These problems will occur to a lesser extent, if the courts sidestep the law, and in fact use an infringer's profits to measure damages, while explaining the award as an amount not less than a reasonable royalty, as they sometimes seem to do. However, it should be unnecessary for the courts to evade the law by a mere semantic device.

Because the courts have generally acquiesced in the notion that Congress eliminated an infringer's profits as a measure of damages, it would seem necessary for Congress to restore an infringer's profits attributable to infringement as a measure of damages. Changing the law to permit patent damages to be measured by an infringer's profits attributable to an invention would bring patent damages into line with measures of damages applied in all other areas of intellectual property law, and would avoid many difficulties that currently attend measuring damages by lost profits and a reasonable royalty.

V. The Supreme Court

The notice mentions two recent decisions of the Supreme Court. I have described those decisions and their effects on the economics of patents in earlier articles.[68] Again, I will not

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[68] John W Schlicher, Patent Licensing, *What to Do after Medimmune v. Genentech*, 89 Journal of the Patent and Trademark Office Society 341 (2007)("*What to do after Medimmune*"); John W Schlicher, *The New Patent Exhaustion Doctrine of Quanta v. LG - What It Means for Patent*

repeat here what I said in those articles. It is too early to know the ultimate effects of those decisions, because it is difficult to know whether the courts will read those decisions as controlling only the particular issues before the Court or whether those decisions sweep more broadly. If those decisions are read to apply broadly, they will do considerable harm.

A. *Medimmune v. Genentech*

Since *Lear v. Adkins* in 1969, patent licensing has occurred under legal constraints on how the validity or invalidity of a patent affects the rights of a patent owner and the obligations of a licensee. For about fifteen years after 1969, the law was in a state of mild chaos.[69] The legal situation then settled down and people generally adapted licensing practices to the law. In 2007, the Supreme Court stirred the pot again in *Medimmune v. Genentech.*[70]

A *Medimmune* problem arises when a patent owner grants a license that defines the royalty obligation by reference to validity. In that situation, *Medimmune* means that, if a patent owner says something that permits the licensee to allege that it believed the patent owner would terminate the license and sue for infringement if the license failed to pay royalties, the licensee may pay under protest, and bring an action for a declaratory judgment that the license means royalties are payable only if the patent is valid and that the patent is invalid. If the licensee wins on both issues, the royalty obligation ends at some time the *Medimmune* decision declined to identify. If the licensee loses on the contract issue or invalidity, it loses nothing.

Medimmune says only that a court has jurisdiction to decide whether a license, as properly interpreted, means that royalty payments are dependent on validity. The Court did not say how the issue should be decided in that case. Therefore, the full implications of *Medimmune* are unknown. If a patent owner wins on the contract issue, such as by showing that the reference to validity applied only to judgments in actions between the patent owner and a third party, the patent owner may avoid a decision on validity. If the owner loses, the licensee may try to prove invalidity. Many patent licenses have been written in a way that will make it very difficult for the patent owner to win on the contract issue.

Medimmune has the following effect. If patent owners define royalty obligations by reference to validity, and the courts interpret those definitions to mean that royalties are payable only if the patent is valid, patent owners must choose between having rights under the license

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Owners, Licensees and Product Customers, 90 Journal of the Patent and Trademark Office Society 758 (2008)("*The New Patent Exhaustion Doctrine*").

[69] I described these issues in two articles in the mid-1980s, and the patent law book. John W. Schlicher, *A Lear v. Adkins Allegory*, 28 Journal of the Patent and Trademark Office Society 427 (1986); John W. Schlicher, *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); John W. Schlicher, *Patent Law: Legal and Economic Principles* (West Group 1992, Second Edition 2003), chapter 12.

[70] *Medimmune, Inc.* v. *Genentech, Inc.*, __ U.S. __, 127 S.Ct. 764, 2007 WL 43797 (U.S.), 81 U.S.P.Q. 2d 1225 (2007).

(royalties) or patent rights (damages and an injunction). Potential licensees need not choose. They may have rights under the license (freedom from damages and an injunction), and the right to litigate whether the patent is valid. If successful in litigating validity, the licensee eliminates the patent owner's rights under the license, the royalties. In sum, if licenses are written in that way, patent owners must choose between having the benefits of licensing or infringement litigation. Licensees may have the benefits of both licensing and validity litigation.

If a patent owner has defined royalties in that way, the owner's main hope of avoiding a *Medimmune* declaratory judgment action is that the licensee will conclude that its business interests are not served by trying to kill the patent, or that the royalty savings do not justify the investment in invalidity litigation. Patent owners will try to avoid *Medimmune* actions by not saying anything to licensees that could be understood to indicate that the patent owner would terminate and sue for infringement, if the licensee does not pay. However, if, as happened in *Medimmune,* a patent owner creates a controversy by telling a licensee that it expects the licensee to pay royalties on some product, careful language is unlikely to prevent declaratory judgment actions.

Medimmune should not control licenses that define royalty obligations without reference to validity. Patent owners should be able to avoid *Medimmune* declaratory judgment actions by defining royalty obligations in that way, and dealing separately with the effect of invalidity judgments in third party actions. I have recommended these approaches for years. Patent owners who have defined the royalty obligation without referring to validity should be unaffected.

However, many licensees will argue that *Medimmune* applies to all licenses. They will commence declaratory judgment actions to have the patents declared invalid, and say *Lear* requires that all licensees may defend an action for royalties by proving invalidity. They will say *Medimmune* means the federal courts have jurisdiction to decide those actions, if the licensees believe the patent owner would sue to require payment, if they stopped. If the lower courts agree, *Medimmune* will apply regardless of how the patent owner defined the royalty obligation. It is difficult to predict how the lower courts will deal with those actions.

I would expect *Medimmune* to cause patent owners to refocus on how they deal with *Lear* and the possibility that *Medimmune* will be extended to all licenses. The simplest and most direct response to *Lear* and an extension of *Medimmune* is to provide that the patent owner may terminate the license, if the licensee alleges in any action that the licensed patent is invalid. Patent owners should also consider a provision that the licensee will not assert in any action that the licensed patent is invalid and will not commence or prosecute any action or claim seeking judgment that the patent is invalid. The lower courts have said, I believe incorrectly, that *Lear* makes such a provision unenforceable. If a patent owner does not believe these provisions are sufficient to deter or prevent a licensee from stopping payments and defending a contract action under *Lear*, or from paying and commencing a *Medimmune* action, there are a variety of other approaches to termination rights, royalty obligations, and other terms to deal with *Lear* and *Medimmune* actions.

Ultimately, if a patent owner believes that there is any chance that it will face a *Medimmune* action in which royalties are found to be dependent on validity and the contract

approaches are inadequate, the patent owner should license only at rates that are not discounted based on the likelihood of a validity judgment, not discounted based on the risk of validity litigation, and not reduced based on saving infringement litigation costs.[71] This will often prevent licensing. When it does, those patent owners will be better off capturing the value of their inventions through infringement litigation.

If all efforts to avoid *Medimmune* fail and royalties always ultimately depend on validity judgments, the value of patents will decline for companies that license patents for royalty revenue exceeding validity litigation costs by a margin that justifies licensee litigation. There will be much less licensing and much more patent infringement litigation. Patent owners and licensees have a mutual interest in legislation to solve this potential problem.

I suggested an amendment to the Patent Act in 1985.[72] It was:

> Any agreement between the parties to a patent license agreement shall not be unenforceable to the extent that it prohibits or deters the licensee from asserting invalidity, including provisions that (1) the licensee shall not assert in any action or proceeding that the licensed patent is invalid or shall not commence or prosecute any action or claim seeking judgment that the patent is invalid, (2) the licensor may terminate such license in the event licensee does so, or (3) the licensee's obligation to pay royalties shall continue without respect to whether the licensee does so.

The purpose of that provision was to allow patent owners, patent infringers, and patent licensees to work out issues related to the effect of validity issues. If a patent owner and a potential licensee wished to agree that invalidity would not be a defense to an action for royalties, the licensee would not file a declaratory judgment action seeking a judgment of invalidity, and the license will be granted at lower royalty rates, they would be free do so. If they wished to agree that invalidity would be a defense to an action for royalties, and agree that the licensee could file a declaratory judgment action seeking a judgment of invalidity, they would also be free to do so, and license at higher royalty rates. If they wished to agree that invalidity

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[71] This means the patent owner should determine a rate that would be acceptable without these problems, and calculate the rate at which it will license by (1) dividing that rate by the probability the patent would be found valid if litigation (such as 0.5), (2) divide the resulting rate by the percentage discount the patent owner would use, if infringement litigation risks were avoided (such as 0.5), and (3) add to the rate an amount approximating validity litigation costs. For the reasons, see Section IV. If the patent owner is willing to gamble that the licensee will not use *Lear* and *Medimmune,* the patent owner could multiply the resulting rate by its estimate of the probability that the licensee will not do so.

[72] John W. Schlicher, *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).

would be a defense to an action for royalties, and that the licensee would not file a declaratory judgment action seeking a judgment of invalidity, they could do so, with royalties somewhere in between. If they wished to agree that invalidity would be a defense to an action for royalties, and agree that the licensee could file a declaratory judgment action seeking a judgment of invalidity, and specify that the royalty obligation would continue until the date of a final judgment of invalidity, they could do so. If they wished to deal in a myriad of other possible ways with the effect of validity or invalidity judgments in third party actions, they could do so.

If the law wished to make clear that licensee estoppel is the default rule, if the parties do not address the issue, the following additional language could be added:

> In an action involving a claim for royalties under an agreement authorizing a person to use any rights granted under a patent that requires payment of such royalties based on activities involving a product or process employing the invention of such patent, the invalidity of such patent shall be a defense to the obligation to pay such royalties accruing after entry of a final judgment of invalidity by a court of competent jurisdiction, unless the agreement provides otherwise. An agreement providing that royalties are payable notwithstanding the validity or invalidity of a patent, or making other provisions with respect to the effect of validity or invalidity on the rights or obligations of a party to the agreement, including royalties payable, shall be enforceable.

B. *Quanta v. LG*

The patent exhaustion doctrine has been a source of confusion and frustration for patent owners, their licensees, and their customers for 160 years. In 2008, the Supreme Court in *Quanta v. LG* changed the doctrine again. I discussed that decision in the paper mentioned earlier.

The Court reached a result that is understandable given the language of the license that created the issue. If the only effect of a Supreme Court decision is that other cases involving the same essential facts must be decided in the same way, the *Quanta* decision should have little effect on future licensing. Skilled lawyers should be able to work around it. The decision dooms past licenses written in the same way. The *Quanta* decision is likely to have broader implications.[73] The *Quanta* decision is likely to be read to sweep away important principles that had little or nothing to do with the case.[74] This is unfortunate, because the *Quanta* decision is based on the Court's misunderstanding of its prior decisions on exhaustion and the law on the

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[73] *The New Patent Exhaustion Doctrine* § II.

[74] *The New Patent Exhaustion Doctrine* § V.

ability of a patent owner to limit the rights a buyer receives, when the owner sells a product and separately licenses the patent rights.[75]

The exhaustion and implied license doctrines influence how patented inventions are used and the profits patent owners earn. Properly defined, those doctrines increase the value of patented inventions and improve the efficiency of the patent system. Improperly defined, they limit the value of patent rights, limit use of patented inventions, and impair the system. Patent owners should be permitted to sell products and separately license their patent rights to purchasers.[76]

Briefly, this is what happened. LG Electronics ("LG") owned many patent relating to computer systems, computer components, and computer methods of operation. LG and Intel entered a cross license agreement. LG licensed Intel under all its patents to make, use, and sell any products. The license said no license was granted to third parties to make combination products from licensed products and components acquired from someone other than LG or Intel or to use or sell combination products. The license said nothing in the license altered the effect of patent exhaustion on Intel's sales. LG and Intel entered a separate agreement in which Intel agreed to give a written notice to its customers about patents. The notice said that Intel had a license ensuring that any Intel product was licensed by LG and did not infringe any patent held by LG. The notice also said that a license did not extend, expressly or by implication, to any product that the customer made by combining an Intel product with any non-Intel product.[77]

Intel sold microprocessors and chip sets under the license to computer assemblers and suppliers including Quanta Computer ("Quanta"). Quanta used those microprocessors and chip sets to make computers. In those computers, the Intel microprocessors and chip sets communicated with other components and memory devices over buses that carry data and instructions. Quanta sold those computers. LG sued Quanta and other computer makers for patent infringement under six patents. Only three of those patents were involved in the decision reviewed by the Supreme Court. According to the Court, each of those patents contained claims to computer systems and methods of using computers.

The issue was whether Quanta infringed LG's system and method claims when it sold computers made with microprocessors and chip sets purchased from Intel. The Court said that issue was governed by the exhaustion doctrine. The Court held that the exhaustion doctrine applied to sales of unpatented products that substantially embodied the invention of a patented system or method. The Court said an unpatented product substantially embodies the invention when that product has no non-infringing use and embodies all inventive features of the patented

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[75] *The New Patent Exhaustion Doctrine* § V. The Court mistakenly read its decisions in *Bloomer, Mitchell, Adams, Univis Lens, Ethyl Gasoline, General Talking Pictures,* and *Keeler.*

[76] *The New Patent Exhaustion Doctrine* § III.

[77] The Court's description of the notice suggests that the license said that no license was granted expressly or by implication to third parties to make combination products or to use or sell combination products using Intel products.

invention. A product embodies all inventive features of a patented invention when use of that product to make and use some larger product or carry out some method involves additional components or steps that are common or standard for use in products or methods of the same type as the patented product or method.

The Court found that the Intel products met those requirements and Intel's the sale of those products to Quanta exhausted LG's rights under its system and method patents. The Court also found that LG's license to Intel authorized Intel to sell components to Quanta for any use, including use to make computers. The Court found that the language in the license about the rights of third parties and the notice Intel gave its customers did not prevent exhaustion.

The language of the Quanta decision has three and perhaps four important consequences.

First, prior to *Quanta*, the Court applied the exhaustion doctrine to preclude a claim of infringement against a purchaser only where the patent owner or its licensee sold a patented product, that is, a product that embodied all the parts and features specified by the claim of a patent. Prior to *Quanta*, the Court applied the implied license doctrine to determine whether a patent owner had a claim against a purchaser where the patent owner or its licensee sold an unpatented component or material and the infringement claim was based on the making a patented product containing that component or using the material to carry out a patented method.

While the Court referred to the implied license doctrine in *Quanta*, the Court said that the implied license doctrine was irrelevant to the exhaustion doctrine and the exhaustion doctrine governed the rights of the purchaser in that action. The effect is that the exhaustion doctrine effectively replaces the implied license doctrine for many sales of unpatented products. When the exhaustion doctrine applies, the implied license doctrine no longer matters.

After *Quanta*, in order to decide whether exhaustion applies to sales involving an unpatented product, the parties to a proposed sale must understand the novel features of each invention of each patent owned by the seller and must make judgments about whether all those novel features are found in the product to be sold and whether there are alternative uses for the product at the time of the sale.

Second, the Court said all post-sale restrictions are invalid. If post-sale restrictions means all limitations in a patent license granted to a purchaser, *Quanta* eliminates the rule that a patent owner may sell a product subject to conditions or restrictions on the scope of the immunity to infringement liability that the purchaser obtains by buying the product. When the exhaustion doctrine applies, patent owners may not sell a product and separately license the patent rights to the buyer in a way the reserves any of the patent rights.

Third, the Court said exhaustion applies only to a licensee's sales the license authorized the licensee to make. The Court said the only issue in applying the exhaustion doctrine to a sale by a licensee is the scope of the license granted to that licensee. The Court found that a licensee granted a license to make, use, and sell any products under all of a patent owner's patents had authority to sell an unpatented product for use by a purchaser to make a patented system or carry out a patented process.

The Court found that the licensee's authority to sell for those uses was not limited by license provisions saying that nothing in the license limited the operation of the exhaustion doctrine and a license was not granted to a purchaser to use a licensed product to make a larger product or system by combining the licensed product with products obtained from others. The Court said the language about a purchaser's license related only to the existence of an implied license.

The Court also found that the licensee's authority to sell for those uses was not limited by the licensee's obligation under a separate agreement to give notice to purchasers that the products purchased were licensed by the patent owner and the license from the patent owner to the seller did not extend to any product the purchaser made by combining the seller's product with products of others.

Fourth, the Court said that a sale may be made subject to contracts with the purchaser at the time of sale. The Court implied that such contracts could not function to reserve to the patent owner any of the rights that would be exhausted by a sale. Taken literally, this also means that a patent owner may not sell, grant a limited license, and enforce the patents against unauthorized activities. However, it is far from clear the Court has precluded selling and licensing separately.

Quanta is understandable. However, it is also unfortunate. In this situation, an oddly written agreement may have resulted in fundamental and sensible doctrines of patent law being swept away for no good reasons.

Quanta is also out of step with current law. *Quanta* is based on the Court's decisions in the 1940s in *Univis Lens* and *Ethyl Gasoline* where the Court found that patent owners violated antitrust law by controlling what the Court believed were effectively resale prices. In 1997, the Court said an agreement by which a company set maximum prices for resale of its products could have beneficial effects for consumers and was not *per se* unlawful under antitrust law.[78] In 2007, the Court said the same was true of an agreement by which a company set minimum prices for resale.[79] The Court said the rule against general restraints on alienation was irrelevant to determining the economic effects of restrictions a seller places on its distributors or retailers.[80]

Quanta seems to ignore that the Court would have decided *Univis Lens* and *Ethyl Gasoline* by a very different method than the Court used in the 1940s and would have based those decisions on economic effects and consumer benefits, and not on legal formulas about exhaustion of legal rights. In my view, *Univis Lens* and *Ethyl Gasoline* would likely be decided differently today. The Univis Corporation and the Ethyl Gasoline Corporation where trying to license in ways that would increase their profits from commercial use of their inventions. Those

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[78] State Oil Co. v. Khan, 522 U.S. 3, 7, 18-19, 118 S.Ct. 275, 278 (1997).

[79] *Leegin Creative Leather Products, Inc. v. PSKS, Inc.*, __U.S. __, 127 S.Ct. 2705, 2710 (2007).

[80] *Leegin Creative Leather Products, Inc. v. PSKS, Inc.*, 127 S.Ct. 2705, 2713 -2714 (2007).

companies where not fixing prices merely to increase the profits earned by retail sellers of the finished eyeglasses or retail gasoline sellers.

Quanta is also based on the Court's decision in the 1940s in *Motion Picture Patents* where the Court found that patent owners could not employ tying arrangements in any circumstances and for any reasons. In 1952, Congress amended the Patent Act to overturn some the Court's decisions in the 1940s on the ability of patent owner's to employ tying arrangements, as the Court explained in 1980.[81] In 1988, Congress again amended the Patent Act to limit the way the patent misuse doctrine limited a patent owner's ability to employ tying arrangements.[82] This amendment overruled *Motion Picture Patents*. Again, the Court seemed unaware that the law had moved on and rejected the Court's views in the 1940s of the proper limits on the ways patent owners could exploit their rights.

VI. Uncertainty

Uncertainty regarding the validity and scope of patents has a significant effect on patent transactions. Unnecessary uncertainty in the substantive law of patents undoubtedly reduces the value of patented inventions and increases the number of products and services not introduced the due to uncertainty about the validity or scope of patents. To the extent that the substantive law could be change in a way that would reduce uncertainty without diminishing proper incentives to make inventions, the substantive law should be changed.

The Patent Reform Act will not reduce overall uncertainty; it will increase uncertainty. The principle claim of the patent reformers is that the Patent Reform Act will reduce uncertainty by awarding a patent to the first inventor to file a patent application rather than the first inventor to make an invention. Even if the claim is correct and the change has not other effects (and it will), the Patent Reform Act creates new uncertainty by changing the definition of the activities the constitute prior art, changing the scope of prior art activities from those that occur in the United States to those that take place anywhere in the world, requiring that the nonobviusness of an invention to an ordinarily skilled person be judged as of the time a patent application and not at the earlier time when it was actually made (when the problem may have been more difficult and the information and technological principles helpful in solving it less useful), broadening so-called prior user rights, and making other changes.

The Patent Reform Act also ignores the issues on which legislation could helpfully reduce uncertainty. I have described elsewhere particular ways to change patent law to reduce uncertainty.[83] These include redefining the public use and on sale doctrines so inventors trip

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[81] 35 U.S.C. § 271(d); *Dawson Chemical Co. v. Rohm & Haas Co.*, 448 U.S. 176 (1980).

[82] 35 U.S.C. § 271(d)(4)-(5).

[83] John W. Schlicher, Patent Law: Legal and Economic Principles, West Group (1992, Second Edition 2003), Chapter 13, §§ 13:27; 13:39; 13:43: 13:45; 13:64; 13:79; 13:94; 13:95: 13:180; and 13:202 and chapter 8, § 8:30. Among others, I would change the law on novelty under section 102(a), abandonment under section 102(c), the effect of prior invention under 102(g), the rule against double patenting, eliminate section 102(e), modify what constitutes the prior art for

over them with less frequency, eliminating means-plus-function claims, eliminating the doctrine of equivalents or adopting a more well-defined doctrine of equivalents, eliminating the misuses defense or at least making it co-extensive with the antitrust limits on exploiting patents, redefining the law the court have developed after *Lear* and will develop after *Medimmune* so that patent owners and licensees may provide royalties that sensibly reflect the value of an invention in view of legal uncertainties and that eliminate the possibility of needless and expensive litigation, and making many other desirable changes.

However given whatever substantive law exists at any point in time, patent owners and potential licensees should be permitted to adjust the price and other terms on which they do business to carry on in spite of that uncertainty. The price adjustment in any particular situation will depend on the owner's and licensee's views of the probability a court would decide a certain issue in a certain way and perhaps even more importantly on the owner's and licensee's aversion to risk or, if it exists, preference for risk. If a patent has a 50 percent change of being found valid in an infringement action, a patent owner and a licensee should be free to adjust the price to reflect that uncertainty.[84] Whatever the outcome in a particular situation, the law should encourage them to make those agreements by enforcing their terms. The law should not force patent owners and potential licensees to resolve those uncertainties by seeking assistance from the Patent and Trademark Office or the federal courts.

The law should not force patent owners and potential licensees to resolve the uncertainty by seeking assistance from the Patent and Trademark Office or the federal courts.[85] Private agreements between patent owners and potential licensees will reduce the costs of uncertainty and facilitate the use of patented inventions in spite of that uncertainty far more efficiently and quickly than proceedings in which the Patent and Trademark Office or the federal courts. For that reason, I do not expect the various proposals in the Patent Reform Act for repeated Patent and Trademark Office review of patentability to yield significant benefits and rather expect it primarily to yield increased costs and delay. Our prior experience with various forms of reexamination should have taught us about the limited value of repeated administrative review.

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purposes of section 103, change the conduct that constitutes public use or on sale under section 102(b), change how the scope of a patent is determined to eliminate the two step process of deciding literal infringement and applying the doctrine of equivalents, eliminate means-plus-function claims, modify the inequitable conduct defense, change the misuse defense, and eliminate the prior user defense under section 273.

[84] I described how patent owner and licensees do this in 1985. See John W. Schlicher, *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), section IV.

[85] I do not believe the law should constrain decisions patent owners and accused patent infringers to litigate or settle actions in which a patent owner seeks to enforce a patent in the face of uncertainty on issues of patent validity or scope.

VII. Transparency

The notice asks about "transparency" in the market for intellectual property rights. Transparency could mean several things.[86] Since I am not sure what the FTC means by transparency, I am not sure I have useful comments. Transactions between patent owners and their licensees did not contribute to the current economic problems facing the United States that has prompted talk about transparency. Transactions in intellectual property rights are private contracts between patent owners and producers of goods and services. These citizens make contracts regarding rights granted by the federal government. However, except for the recipients of government research subsidies, the people owning those rights made the investments to create the underlying inventions and will bear all the costs of operating under their agreements.

There is no legitimate government interest in forcing those individuals and companies to disclose the existence or the terms of those agreements to others, including the federal government, except to the extent that those disclosures are necessary for purposes of the securities laws or legitimate inquiries in connection with antitrust, tax, or other similar matters.

The existence and terms of license agreements should not be disclosed to the public to permit the government or people who are not parties to particular transactions to learn of their terms. People and companies have a variety of reasons for keeping this information secret, including the fact that the confidentiality of contract terms often enhances the ability of the parties to reach an agreement on terms under which each party benefits.

A government requirement of public disclosure in the name of transparency is not a neutral act. A disclosure requirement would change the terms on which people are willing the deal and reduce the number of such contracts, because disclosure defeats the interests of a party or parties served by confidentiality. In particular, if the government required public disclosure of the price terms of licenses, the prices at which patent owner and potential licensees do business will change, the number of licenses will decline, and the profitability of licensing will be

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[86] It could mean requiring all people and companies who assign or license patents to publicly disclose the existence of those agreements and their terms. It could mean requiring a patent owner that has granted a license to disclose the existence and terms of that license to other potential licensees. It could mean forbidding a patent owner and a licensee from agreeing to keep the existence and terms of their agreement confidential. It could mean requiring a potential licensee to disclose to a patent owner all prior agreements and licenses that might have some bearing on its ability or incentives to perform under a license granted by that patent owner. It could mean requiring a patent owner to disclose to a potential licensee all of the information it possesses about the ownership, validity, scope or value of a patent. It could mean requiring a potential licensee to disclose to a patent owner all information it possesses about the validity or value of the patent and its capability and intentions regarding use of the invention.

reduced. This disclosure requirement would not improve the way the market for patent rights functions; it would interfere with the way the market functions.[87]

If patent owners and their licensees find it in their interests to impose obligations of confidentiality on each other regarding the terms on which they do business, that decision adversely affects no one else and the law should respect that provision of their agreements the same way the law presumably respects all other terms of their agreements. If the government were to require disclosure of the financial terms of patent licenses and other patent transactions, the price for which patents are licensed would increase and the number of license transactions would decrease. The price would increase because patent owners who are now willing to give what they regard as low terms to one licensee in hopes of obtaining a higher price from the later licensees will no longer license for the low price. Transactions would decrease because of the higher prices. Total transactions would also decrease because a licensee willing to agree to pay a certain price if the transaction is kept secret will no longer agree to that price if the transaction is made public. A licensee does not want others to know the price paid out of fear that this will increase the price that others will demand from it. If there agreements will be made public, they will agree to license only at lower prices and at the lower prices patent owners will be willing to license in fewer situations. The result will be less licensing and more litigation.

Public disclosure of licenses would also result in changes in damage awards. Patent owners capture only a small fraction of the economic value of patented inventions through licensing and other ways of exploiting the patent rights. This is a result of the uncertainty about the validity and scope of patents, uncertainty about the remedies available for infringement, defective standards for determining damages, the cost of infringement litigation, the transaction costs of licensing, legal rules that interfere with the enforcement of license agreements and other methods of capturing the value of patented inventions, and the uncertainty about the future economic value of patented inventions.

If the government required patent owners to disclose publicly the royalty provisions of license agreements, patent owners would capture an even smaller part of the value of those inventions. If the government required that disclosure, reasonable royalty damages based on the hypothetical negotiation approach would go down because evidence of the results would show

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[87] Patent owners and the licensees have managed to agree on mutually beneficial prices and terms for licenses under hundreds of thousands and perhaps even millions of patents for two hundred years. Some people may think they will do it "better" if the law would require the terms of those agreements to be made public. They may believe licensing would be "better," because there would be more public information about royalties and other terms. Those people are wrong. The royalties and terms of any license between two specific companies at some specific time on some specific patent related to some specific industry setting and some specific product under some specific current and anticipated economic conditions given some anticipated litigation costs and some perceived legal uncertainties and risks are almost useless as guides to the royalties and terms of any other license. Even if that information had some value to others in other situations, licensing would not become more efficient because requiring disclosure would impair the functioning of markets for licenses in the ways mention above.

how little patent owners capture through licensing. Reasonable royalty damages based on an established royalty would go down because this method of determining damages would be applied far more often and the low returns to licensing patents would lead to lower damages. Reasonable royalty damages based on the *Georgia-Pacific* "consider the factors" approach would go down, because the result of actual licenses is a permissible factor and would likely trump other considerations.

The result would be that damages for patent infringement would go down. Because expected damages in the future would be lower, royalties in actual licenses would be lower. If a permanent injunction against infringement became uncertain or unavailable in some situations, royalties in actual licenses would be lower still. The result of lower license royalties would lead to another round of lower damage awards. Where the situation would stabilize, if it ever did, is anyone's guess. However, the consequence of requiring disclosure of royalty provisions in the name of transparency would significantly reduce the value of patented inventions in the future. The future economic losses are difficult to estimate.

There are undoubtedly companies that would benefit if the government required other companies to disclose publicly the terms of their agreements and who may be expected to attempt to improve their private situations by calling for disclosure in the interest of the public. The government should treat those requests in the same way it treats all requests by a company or group of companies in some industry asking the government to interfere with the activities of some other company or group of companies with whom they compete. Companies that view themselves as net purchasers of licenses could prefer some public disclosure rule because they believe it would reduce the value of the patent licenses they purchase. However that is not a reason for the government to intervene. It is a reason for the government to leave the situation alone.