Legal Remedies For Patent Infringement: From General Principles To FRAND Obligations For Standard Essential Patents

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At present, the traditional informal mechanisms for setting FRAND rates for SEPs have come under extensive attack by the Federal Trade Commission and elsewhere, from those who believe more limited damages and less frequent injunctions offer the best path to resolving disputes over Standard Essential Patents. In this article we take issue with those conclusions. We begin with an explanation of how a damage system for ordinary contract disputes does not typically rely on the three standard measures—expectation, reliance, restitution—for resolution, but uses liquidated damage to deal with the scenario where a defendant seeks to flout its own agreements. We argue that the techniques that work generally in contract law offer strong confirmation of the traditional rules of damages and injunctions now under wide assault.

I. SETTING THE STAGE: FROM COMMON LAW TO INTELLECTUAL PROPERTY

Patents live in two parallel universes. On the one hand, they are part of a larger system of property that includes as their closest relatives, land and chattels. On the other hand, patents exist solely as a creature of the state, which, through its general laws, allows individuals to obtain a patent—or the right to exclude others from making, using, offering for sale, and selling a patented invention for a limited period of years—so long as the patent application meets certain conditions the state sets as part of the patent bargain it offers to all prospective inventors. Property rights in land and chattels are typically created by initial occupation, which also confers an exclusive right to the first possessor, as well as subsequent purchasers. The role of the state is not to create the rights but to recognize and protect them. The bundle of property rights thus contains, in addition to the right to exclude, the right to possess, use and dispose of the property interest.[3] That initial assignment of rights is usually not the last, for the original owner is then entitled either to use the property or to dispose of it to some third party, either by way of an outright assignment that transfers the property to another or by way of a limited transfer that leaves the original owner with a retained interest. The processes that allow for one such transfer allow for others as well. Any removal of a stick from the initial bundle of rights can impair the value of the owned asset for one of two reasons. Either it creates a system that leaves certain rights beyond exploitation, or it creates a built-in hold-out problem that requires the diminished property owner to enter into a transaction with either the state or some third party who for no good reason is put into a position

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to block the deployment of an interest that it cannot use. The central task of creating an initial configuration of rights in any asset is to speed its path towards effective utilization with a minimum of impediments from outsiders is yet another application of the Coase theorem on the importance of low transaction costs as an engine of economic growth.[4]

Once these property rights are created by original acquisition, two other bodies of law come into play: contract and tort. First, the law of contract sets the ground rules by which property interests can either be alienated or shared. The basic logic of the contract system is to facilitate gains from trade, which can then be shared by both parties. Those transactions will take place so long as the joint gains exceed the combined transaction costs to the relevant parties. The legal system does not seek to identify for any private party the potential source of economic advantage, which varies by asset and trading partner. But what it does is establish standard modes of transacting that reduce the friction for voluntary transactions, in turn increasing the probability of their occurrence and the gains they generate.

In dealing with these contract rules it is necessary to deal with both a general case and a discrete problem. In the common competitive market system, the essence of a working market is one that allows each party the *absolute* right to refuse to deal with any one else. This rule in effect allows parties to fashion their own bargains, each knowing that if it pushes too hard for the ideal agreement it will lose its prospective trading partner to a competitor. But in those cases where the contracts in question involve a single supplier, such alternatives are not available, so the common law from the earliest time imposed a duty on the party that was the sole supplier of single services to provide them on what are now called fair, reasonable and nondiscriminatory, or FRAND terms.[5] These monopoly situations have long been understood as exceptions to the usual rule of freedom of contract, and a complete analysis of any system of private relations requires special treatment to determine how these sole supplier arrangements operate in different contexts, including traditional common carriers, traditional public utilities and of course modern patent standard setting agreements.

The backstop to these basic contract principles is found in the law of tort, which is designed to prevent parties from circumventing the contract rules, whether in competitive or FRAND type situations, simply by taking those things they want without paying for them. In these situations, the conventional legal wisdom gives strong protections against the willful conversion of goods or the willful dispossession of property. In order to reduce incentives to bypass the contract system, the rules usually specify a return of the land or chattel, coupled with an award of interim damages. The simple impulse behind these rules is that people will avoid circumventing the established system of property rights if their unilateral actions leave them no better, and preferably worse off, than they were before.

Both contract and tort law present questions of optimal design, and it is on this point that private contracting practices enter. Sophisticated transacting parties choose rules that from start to finish will, from the *ex ante* perspective, maximize the joint gain of the parties. The task requires designing rules on liability, defenses and damages which in combination maximize the prospect of orderly performance, which those rules can do only by minimizing the probability and severity of breach. Understanding how contract provisions in competitive markets address issues of liability and damages offers a sensible template for developing the analogous rules needed to minimize the social dislocation that arises in stranger cases, most commonly by the taking or damaging of property. Once this pattern is understood, it is easier to devise the optimal rules for licensing patents and for addressing cases of infringement by strangers. For both tangible and intellectual property, the contractual

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rules offer an instructive lens through which to evaluate the tort rules. Accordingly, this article proceeds as follows. It first develops basic principles for analyzing contract liability and damages in the general case. It then considers torts, and determines how tort rules can be framed to work both as a complement and analogy to basic contract principles. With the two common law systems understood it is then possible thereafter to consider FRAND situations in the general case, which in turn sets the stage for a closer examination of possible solutions to FRAND issues, including various forms of dispute resolution applicable to the modern patent system. In our view, the conclusion to be drawn is that the current system which relies heavily on informal mechanisms of dispute resolution that take into account the many cross-currents of the law of remedies and damages will work far better than any systematic effort to judicialize or otherwise formalize the dispute resolution process in connection with FRAND-encumbered patents. The current system, however, untidy, has worked well over many years, and the new round of litigation now working its way through the courts shows the perils arising when courts either try to set FRAND rates or resolve damage issues involving infringement of SEPs.

II. CONTRACTS: FROM FORMATION THROUGH BREACH

A. Formation

A full economic analysis of contractual design and structure must look at all stages of contract formation and performance. The actions taken at the time of contract formation will influence the behavior of the two (or more) parties to any given transaction. The rules governing the back end on the occasion of nonperformance will influence the behavior of both parties prior to and after the contractual relationship falls into distress. It is therefore important that one introduce the correct formalities, such as those required under the statute of frauds or recording statutes, so that parties know where they stand relative to each other and to the rest of the world.[6] Within the field of patents, these formalities are substantial in connection with both claim construction and recordation. For both land and patents, the requisite formalities create an evidentiary record that reduces uncertainty over the life of the contract, helping to avoid or resolve potential disputes that may arise during the course of performance. Lower uncertainty reduces the probability of breach in the first place, by reducing the anticipated return to the breaching party. And when breach does occur, either by accident or on purpose, the initial formalities allow for more accurate dispute resolution at a lower administrative cost—a dual gain of enormous importance. In many cases, the transaction cost savings at the back end justify the higher costs incurred at the front end of the arrangement, thereby increasing the velocity of transactions, and with it overall social gain. A parallel argument can be made for recordation statutes that increase the security of transactions by allowing parties to know that they are indeed transacting with the owner of the property and not an imposter.

B. Breach

1. FULLER AND PERDUE

For these purposes, however, the key dimension of the dispute concerns the choice of back end remedies, assuming that the front end issues have been successfully resolved. Here again the analysis in contract and tort law has a heavy influence on how those issues are perceived in the law of patents. On this question there is a common perception, dating back to the major contribution of Lon Fuller and William Perdue in their article, "The Reliance Interest in Contract Damages"[7] that damage options are set by the courts and not by the parties. But there is no reason why in a freedom-of-contract system the parties should not have broad discretion on both ends. The key issue for all parties is to determine the expected payoffs from either performance or breach. These payoffs depend on both the probability of the wrong, and the severity of the loss once it is committed. If the law limits the parties to discussing only the first but not the second, the parties lose flexibility in designing their own liability regimes. The dangers from limiting the parties' flexibility are substantial because any initial discussion and concomitant actions tend to force the damages into certain preconceived categories. For Fuller these were limited to three major variations of one basic theme: restitution damages, by which the party in breach must return whatever cash or property he received from the innocent party; reliance damages, whereby the innocent party recovers all expenses incurred on the faith of the contract even if those expenditures provided no benefit to the defendant; and expectation of damages, by which the breaching party must put the innocent party in the same position, to the extent money can accomplish this, as he would have been in the absence of breach.

Central to the Fuller and Perdue position is that these various remedies form a hierarchy with restitution at the bottom, reliance in the middle, and expectation damages at the top. So stated, the scheme is subject to a number of powerful objections. First, the simple account of the different measures of damages offers no explanation of which remedy should be applied in which case. Nor is it possible to come up with such a theory on the Fuller and Perdue assumption because their analysis offers no coherent account of what parties seek to maximize by their choice of remedy. Instead they content themselves with Aristotelian references to the relative weight of the various interests.[8] Absent that formulation the pairing of remedies with particular cases becomes at best an arbitrary procedure. To make matters worse, there is no a priori reason why the remedies that work to maximize joint cases should be confined to the three put on this narrow list for reasons that are more esthetic than functional. As will become clear later on, in dealing with licenses as well as other contracts, there are two disparate situations that require very different treatments. The first of these deals with the recurrent question of consequential damages that follow from the defendant's nonperformance. The second deals with deliberate breaches of contract by defendants. In the first case, the task is to insure clarity of incentives for both parties in cases of sequential performance. In the second case, the central task is to make sure that strategic behavior by defendants does not subvert the system of voluntary exchanges. The former relies heavily on liquidated damages that *understate* the level of plaintiff's loss; the second, on the use of injunctions and damages that may well *overstate* the measure of the plaintiff's loss. The recent debate in the patent literature is over the second of these two issues, stemming from the seminal Supreme Court decision in *eBay v. MercExchange.*[9] The importance of this distinction relies on a more complete analysis of both situations.

2. BARGAINING AFTER BREACH

One of the most common situations in the law of contracts involves a defendant's breach of contract that leaves

open choices to the plaintiff on how best to respond to the loss. The social task in this case is to minimize the sum of the losses attributable to the breach, the steps taken to reduce that loss and the administrative costs of running the overall system.[10] That system likely dominates in practice any of Fuller and Perdue's three preferred remedies. Getting the right answer does not necessarily speak to either high or low damages. It only addresses the relevant considerations for accomplishing two key tasks: first, designing, as a drafting matter, optimal remedies, and second, filling in the gaps on remedies when the parties are silent.

A fully informed calculation of damages requires addressing possible opportunism at all stages of the venture, and designing legal remedies to forestall them. In many real world situations, the parties do not think about the remedial phase at the outset, so the proper response is for courts to imply those additional terms, to the extent that they are able, in order to create correct incentives for cooperative behavior at low administrative cost. This process, moreover, does not translate into a prescription to award high damages in all cases. Much depends on context.

To understand when lower damages offer the best solution, it is instructive to look briefly at *Groves v. John Wunder Co.*,[11] where the court had to decide whether the correct measure of damages for breach of contract was the choice between the cost of completion of given work on the one hand, or the diminution of value of the subject property from the noncompletion of work on the other. There is no universal answer to this question, but in *Groves*, the lower measure is correct. In that case the defendant agreed to return land on which he had mined sand and gravel "at a uniform grade, substantially the same as the grade now existing at the roadway… on said premises." The cost of honoring that commitment was $60,000, but the increase in market value of the land from honoring it was only $12,000. There was no subjective value in raising the possibility that value in use is higher than value in exchange. Over spirited dissent the Court took the high moral ground and held that the larger sum was required because the strong nature of the basic contractual commitment meant that the defendant had to do what he had promised or face the consequences.

To appreciate why there is something amiss with this result, ask what happens if the defendant had no obligation to repair the land before he vacated possession. At that point, the owner would leave the property as is, instead of expending $60,000 to secure a $12,000 benefit. If that is how the owner would spend his own money, what makes it efficient for him to compel an expense that he would not make himself? A good set of remedies in the ex post state of the world should reach the quickest resolution of the underlying problem while avoiding the risk of strategic behavior by either side. Yet just that happens when the defendant is desirous of minimizing his financial burden, which he knows will be at least $12,000. So to gain leverage, he does not meekly hand over $60,000. Instead he announces that he is ready and able to perform the obligation for $60,000, so as to tender perfect performance the plaintiff does not want. Now the defendant's threat sets up a bargaining game in which both sides are better off if they pick some cash transfer payment above $12,000 and below $60,000 to liquidate the performance obligation.

A moment's reflection, moreover, yields two further difficulties. First, there is no unique point within that range, satisfying the requirement of joint improvement. All figures between $59,999 and $12,001 satisfy the condition. Second, efforts by both sides to capture that surplus will necessarily consume resources, shrinking the surplus the two parties have to share. In a noncooperative game rife with bluffing, that loss could be quite great. This entire bargaining scenario is a pure negative sum game, for there is no allocative gain, since neither side wants to return the land to its original contour. It takes little imagination to conclude that in the ex ante

state of the world neither side would adopt a measure of damages that invites this ex post bargaining game. Using the decline of market value as the measure of damages eliminates that risk in its entirety, leaving only an unavoidable valuation question that has to be answered under both measures of damages. It is also worth noting that if the decline in market value is greater than the cost of completion, the damage rule will never come into play because defendant will find it easier to just complete the work, so that the diminution in value rule is robust in all states of the world, in a way in which the cost of completion rule is not. There are, then, cases where it seems clear the lower remedy is preferable from the ex ante perspective. There are also cases, such as those involving the design of a new home, where the subjective value to a property owner can easily exceed the cost of completion, at which point the cost of completion becomes the preferred measure of damages.[12]

THIS IS ONE OF THE MAJOR QUESTIONS IN PATENT DISPUTES, ONCE IT IS DECIDED THAT INJUNCTIVE REMEDIES WILL NOT ISSUE. IN EFFECT, THE RULE ON EFFICIENT BREACH GIVES THE INDIVIDUAL USER OF A PATENT AN OPTION AT AN UNLIQUIDATED PRICE TO DECIDE WHETHER TO TAKE A LICENSE FROM THE PATENTEE OR SIMPLY INFRINGE, KNOWING THAT A DAMAGES ACTION MAY BE BROUGHT AGAINST IT.

In other situations, it is possible to avoid any evaluation of consequential damages by following the U.C.C. rule that disallows consequential damages to any plaintiff who is in a position to cover with identical goods after breach.[13] Why allow for those damages when there is a perfect mitigation strategy that sidesteps the complex cost benefit analysis involved in all too many mitigation cases?

3. EFFICIENT, OR NOT-SO-EFFICIENT, BREACH

The second issue in these damages cases is whether to use an expectation measure of damages in the face of a deliberate breach by a defendant who thinks that his profit is greater than his exposure to damages. This is one of the major questions in patent disputes, once it is decided that injunctive remedies will not issue. In effect, the rule on efficient breach gives the individual user of a patent an option at an unliquidated price to decide whether to take a license from the patentee or simply infringe, knowing that a damages action may be brought against it. In some cases, those risks will be deemed too high, so that the license will be sought. But in other cases (often dealing with different users of the same patented technology) the results will vary by user of the technology. Some of these parties will find themselves constrained to choose the license, while others may move sharply in the opposite direction. It is impossible in the abstract to trace the motivations of the various players, which depend on their exposure to suit, their asset base, the background availability of other technologies should the cost prove too high, and many other variables. But nothing is in practice more common than to see different paths pursued by different parties.

It is in these cases that the weaknesses of Fuller and Perdue's reliance and expectation damages become clear. One popular approach that dates back to work done by Charles Goetz and Robert Scott[14] takes the view that the hidden virtue of the expectation measure of damages is that it induces individuals to breach their promises only in those situations where the alternative use of the resource is of greater value than the promised use. That view rests on the assumption that there is an overall Pareto improvement so long as the defendant is able to make the plaintiff whole by paying the requisite damages, even if he keeps all the gain to himself. But it ignores the possibility, in both ordinary contract and patent licensing cases, that the lost profits—the

consequential damages from breach—may not be known to either party, at which point the approach loses its utility, both for its substantive uncertainty and high administrative expenses. The situation only gets worse, because any strategy that looks solely to the incentives of the defendant to breach, ignores the risk that both parties can engage in opportunistic behavior once a transaction goes off the rails.

The first rule for controlling bilateral forms of misbehavior is to make sure the remedies afforded to each party are independent of the conduct of the other party, so that both sides face correct incentives on the key choice of whether to breach or perform. To see why this is necessary, consider a case where the defendant under a hotel construction contract is required to complete building by a certain date after which the plaintiff is entitled to use the hotel as it thinks best.[15] Neither the reliance nor expectation damage formulas make sense. If the defendant is on the hook to pay reliance costs, there is a strong incentive on the plaintiff to make extra expenditures knowing that the defendant must act as a guarantor of the loss if completion is late. But switch to the expectation measure of damages, and the plaintiff has a strong incentive to enter into multiple transactions that offer promise of great gains, knowing that these gains too are guaranteed in the event the facility is not finished in time. Both measures of damages allow the plaintiff to speculate at the expense of the defendant and to act in ways it would not if it had operated as a single owner in the construction and operation of the hotel.[16]

STATED IN THIS FORM, THE THEORY HAS TO BE INCORRECT. THERE IS NO WAY IT IS EFFICIENT TO IMPOSE BY OPERATION OF LAW A STANDARD OF DAMAGES THAT IS *NEVER* ADOPTED IN ANY VOLUNTARY TRANSACTION, BE IT IN PATENTS OR ANYWHERE ELSE. INDEED THE PRECISE OPPOSITE IS TRUE. THE LAW IS FILLED WITH ALL SORTS OF BUSINESS ARRANGEMENTS IN WHICH OPTIONS ARE EXPRESSLY CONFERRED.

The challenge here is to create a set of damage rules that replicate the incentives facing the single owner, for whom complications of externalities and holdouts are eliminated by virtue of his control over the relevant inputs and outputs from any decision he takes. The issue—and this is critical—for the single owner situation is the need to devise a strategy that will incentivize him to maximize subjective utility. The calculations are often difficult, but by the same token the process is not infected by incentive or bargaining problems.

The question thus arises: how can the single-owner approach help structure cooperative contracting ventures when the theory of efficient breach leads systematically to the wrong results? On this issue it is instructive to start by recalling Oliver Wendell Holmes's famous aphorism, that "the only universal consequence of a legally binding promise is, that the law makes the promisor pay damages if the promised event does not come to pass."[17] Stated in terms of the modern theory of efficient breach, this statement morphs into the proposition that at common law a promise leaves the promisor with the *option* to perform or pay damages. Stated in this form, the theory has to be incorrect. There is no way it is efficient to impose by operation of law a standard of damages that is *never* adopted in any voluntary transaction, be it in patents or anywhere else. Indeed the precise opposite is true. The law is filled with all sorts of business arrangements in which options are expressly conferred. In *none* of those cases is the option price expressed in terms of an unliquidated amount that requires an extensive dispute resolution process, either public or private, long after the dispute is over, to divine the correct option price. Instead across multiple settings, any contractually chosen option takes the form of a specific number, or

of a formula that converts easily into a number, with the addition of a few public facts such as the age of the party or the number of days or hours or seconds a party is in breach.

Given this constraint, legal theory confirms why such formulas should be respected by the law. They are easy to adjudicate after the fact and thus add real value to the parties by eliminating one dimension of uncertainty in the ex post state of the world. It is for this reason that specific (in the sense just mentioned) numbers are preferred to formulas that seek to place the plaintiff in the position she would have enjoyed had the defendant fulfilled its promise, which gives no precise answer. The choice of the dollar figure used in the event of a break-up is not something the legal system can supply in general, any more than it can determine in the abstract the price of all goods and services held up for sale. What it does is identify the ideal type of measure and then leaves it to the parties to fill in the blanks by adding the appropriate number or numbers.

4. LIQUIDATED DAMAGES

At this point the focus of the legal system should be on liquidated damages. In practice, whether private parties take up the invitation to liquidated damages is a separate question that often depends on the size of the transaction. The larger the transaction, the more likely they will come to an agreement on those numbers, as is commonly the case with executive severance packages or break-up fees in connection in large and complex corporate mergers and acquisitions. The only time one resorts to a "reasonable price"[18] is for a completed transaction when specific goods sold are consumed or resold, when no price term has been set in advance. Better that determination than the failure to have any remedy at all as a result of calling a contract "indefinite" because it does not contain a suitable pricing term.[19]

In light of the above, the strong presumption should be in favor of the liquidated damage provision even if it does not meet the standard Restatement and Uniform Commercial Code requirement to offer some "genuine pre-estimate" of the actual losses suffered.[20] It is simply not appropriate that the sole, or even major function of the liquidated damage clause is to estimate future damages where they are difficult to calculate.[21]

It is also common in major commercial transactions to use liquidated damages to structure the rules governing breach to reduce both the probability of a contractual breach and the dislocations it causes. In dealing with this issue the expectation measure is routinely displaced by explicit provisions offering far better incentives that inform how sequential performance, such as the hotel construction contract, should be analyzed. In the simplest of situations, the construction company performs first and the hotel owner makes its decision on how best to deploy the property when the property is under construction. An efficient system has to accomplish two tasks simultaneously. The first is to make sure the defendant does not profit from its own wrong, so as to reduce the likelihood of tardy performance. The second is to make sure the plaintiff does not speculate at the expense of the defendant by taking measures in mitigation that it would not take if it were a single firm having both construction and operations divisions.

The way to accomplish both tasks is through *a liquidated damage* provision that indicates the amount the defendant has to pay in the event of lateness as a function of time, as with the construction contract discussed above. This task requires at a minimum that the parties set a price schedule, which could be linear, or which could increase or decrease with time in accordance with some set plan. The first element of gain from this approach is that it gives the construction company incentives to perform so long as the penalty in question leaves it

worse off than with nonperformance, which is typically the case so long as the obligation to complete construction remains even after the contract is late. The second advantage is that it removes temptation for a plaintiff to mitigate losses inefficiently, knowing that the defendant will have to pay the bill. The fixed figure eliminates conflict of interest because the fixed sum paid by the defendant has no influence on any future decision made by the plaintiff, as the defendant pays the same amount no matter what the plaintiff does. The plaintiff thus has no incentive to spend either too little or too much on future remediation, or ongoing commitments with third parties. One simple instrument thus handles correctly these sequential performance cases far better than any formula that first imposes on a plaintiff the duty to mitigate, which it then hedges with limitations that require the plaintiff's steps to be "reasonable" in light of his endowments and circumstances.

The situation gets more complicated when one relaxes the initial assumption of sequential performance and has interlocking obligations for performance and payment, or multiple performance obligations sequenced between the parties, which often happens in installment transactions. No formula can cover all these cases, so additional governance mechanisms are needed to secure performance by al parties. Often times some independent party determines full compensation on breach, without allowing the innocent party to exercise its holdout potential. As will become clear shortly, this general point applies to FRAND (fair, reasonable and nondiscriminatory rates) to mitigate the holdout problem. There is always a level of litigation potential in these settings, but the informal sanctions that constrain the process—the repeat dealings that extend from present to future projects; the use of architects and others as independent mediators, the development of a body of industry practices that cover the most recurrent situations—reduce the frequency and intensity of disputes to reasonable levels.

III. DAMAGES AND INJUNCTIONS IN PATENT LICENSING CASES

A. Incremental Damages under the 2011 FTC Report-The Role of FRAND Standards

The inescapable conclusion from the arguments in the previous section is that the theory of efficient breach is inefficient by its own standards. In voluntary markets no one uses that approach–not in intellectual property markets such as standard-setting, and not in other contexts. This point also calls into question the recommendation of the Federal Trade Commission with respect to damage remedies for standard essential patents, and provides insight into the difficulties associated with the litigation over FRAND standards now making its way through the courts. Let us take up these two points in order.

The FTC Recommendation report contains this key passage:

> "Recommendation. Courts should apply the hypothetical negotiation framework to determine reasonable royalty damages for a patent subject to a RAND commitment. Courts should cap the royalty at the incremental value of the patented technology over alternatives available at the time the standard was defined."

The difficulties with this proposed rubric are legion.[22] In the first instance, FRAND patents are difficult to evaluate with any of the standard techniques used for stand-alone patents. The value of any given patent included in a standard depends on its interaction with other patents included in the standard. The technical committees that work on these issues have to consider a wide range of possible permutations, so it is unlikely

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the elimination of one particular patent from the standard can be cured by substituting some other patent with identical functionality in its place. Any effort to reconfigure these SEPs months or years after they are first put into place is fraught with both conceptual and practical difficulties, which do not get any easier when licensees unilaterally deviate from FRAND terms without consent, which in practice turns out to be the most likely possibility.

The FTC assumes that the only function of patent damages is to make sure that the patent holder gets at most the amount of money it could have gotten relative to a patent's next best alternative. In making this particular calculation, however, the FTC ignores a number of critical points. Voluntary compliance with a patented standard comes at little or no cost to the firm. But the moment potential standard users know their damages are capped at "the incremental value of the patented technology over alternatives available at the time the standard was defined," they have an incentive to opt out from the voluntary market–that is to engage in *deliberate* infringement of the applicable patent in order to improve their own position. Setting the damage cap at actual damages reduces the incentive, and therefore the likelihood of taking licenses. Why comply, if infringement will on average leave a particular party better off than joining into the standard? To avoid that risk, a patentee might reduce royalty rates below their optimal level. But that strategy comes at a cost because the reduced rate of return from licensing reduces returns on innovation, which in turn reduces the incentive to innovate. Yet this strategy may well make sense if the only alternative requires expensive and uncertain litigation. On this score, it is important to stress that no voluntary option would ever be tied to an unliquidated standard of damages. The pattern of defection if practiced by one can be replicated by others, at which point the internal governance structure needed to keep SSOs in place is subject to serious stress, for individual patent holders now face high costs of litigation, uncertainty of outcome, and delayed revenue streams on their patents, all of which lower the rate of return below what it would be in voluntary negotiations. Why would we think a standard of damages that no one adopts voluntarily, offers a solution to the problem of contracting over damages?

The second point is that the proposed rubric, which ties patent compensation to the incremental value at the time the standard was defined, creates a heads-I-win-tails-you-lose dynamic. If the value of the standard depreciates over time, the price will fall and the latecomer can reap the rewards of delaying. But by the same token if the standard increases in value, the holdout has in effect an option to sign on at the original price, given his credible threat to go without the license if the patent holder does not acquiesce in the original (lower) price. That free option to the putative licensee thus reduces the return to parties who set the standard as well as early good-faith adopters who pay for licensees, so the reward goes to parties who game the system, and not to those who contribute to its overall long term value.

The point here is not to pretend that the risk of holdups does not arise with respect to SSOs. The basic

invocation of the FRAND standard is only intelligible against the backdrop of a world in which the holdup problem is acknowledged. But the correct question involves the *relative imperfections* of the alternative institutional arrangements, and on that question there is no systematic engagement by the FTC or, as far as we can tell by other defenders of the position taken in the FTC report. But there is no good reason to think the holdup problems associated with FRAND patents require extensive litigation to resolve them. Holdup problems are common where businesses are required to modify an existing contract to take into account changed conditions, and in these situations, successful negotiations follow the pattern whereby the parties seek to cost-justify their demands for increased prices by identifying the changes in cost structure that call for alteration. The effort to make accurate cost determinations is the proper way to negate the holdup potential that can arise in these situations. When parties follow that approach no economic duress occurs. But if the parties simply announce that they need compensation for the additional costs imposed on them by the other party's breach of contract, the holdup will constitute economic duress if there is no effort to cost-justify the increases.[23]

Historically, it is just this form of analysis that governs the regulation of monopoly power for public utilities in connection with power and telecommunications services that throughout their history have been subject to FRAND regulation. In each of these cases, the entity in question ran major facilities over which some branch of government had the power to set rates that were intended to walk the fine line between the toleration of monopoly profits on the one hand and the confiscation of capital on the other. The size of the rate base in these cases was huge; often the pace of technological progress was relatively slow; the cost of administration through public utility commissions was small compared to the revenues that passed through the system. The formal administrative processes invoked in these cases, subject to both administrative and constitutional oversight, may well have been less than ideal, but the basic pattern withstood these challenges for close to a century after the issue first raised its head with the passage of the Interstate Commerce Act of 1887.

THE POINT HERE IS NOT TO PRETEND THAT THE RISK OF HOLDUPS DOES NOT ARISE WITH RESPECT TO SSOS. THE BASIC INVOCATION OF THE FRAND STANDARD IS ONLY INTELLIGIBLE AGAINST THE BACKDROP OF A WORLD IN WHICH THE HOLDUP PROBLEM IS ACKNOWLEDGED. BUT THE CORRECT QUESTION INVOLVES THE *RELATIVE IMPERFECTIONS* OF THE ALTERNATIVE INSTITUTIONAL ARRANGEMENTS

The situation with respect to FRAND patents in many commercial sectors in current times is entirely different. The technology moves quickly, so standards have to be frequently revised or abandoned in light of technological change. Quick and easy resolution of cases is critical. At the same time, the repeat-play nature of these games tends to place clear limitations on how holders of SEPs behave relative to other institutions. The familiarity from repeat play improves the odds that those companies committing their patents to SSOs will be less likely to strategically opt out of the system. Indeed, in the patent context, it is rare that a single standard will govern in all cases.[24] Thus it may well be that many different patents and standards are in play at the same time. The licensees in some cases may be in a position to supply cross-licenses that could easily justify a downward adjustment in pricing policy. Or some licensees may provide a useful service to the SSO, which again warrants a price adjustment. Nor is there any reason why all licenses must involve simple royalty arrangements: fixed payments might well be part of the dynamic.

An item to note is that currently there are a large number of SSOs that crank out standards for new products and update standards for old ones. If the coordination problem were as serious as suggested, we should see routine breakdowns in SSOs, yet we do not see that at all in practice. It is worth noting that the FTC attached no weight to the testimony of all major SSOs that their activities are far more uneventful than popular critique conjures. These organizations use a loose version of the FRAND obligation to guide their negotiations, but they do not lock themselves into any strict formula, given the variety of situations they face.

THIS POINT IS CRITICAL BECAUSE IT IS NOT POSSIBLE IN THE ABSTRACT TO DECIDE WHICH PARTY IS WEARING THE WHITE OR THE BLACK HAT. HOLD-UPS ARE NOT A ONE-SIDED PHENOMENON, BUT CAN BE PRACTICED BY AN ASTUTE LICENSEE THAT BARGAINS AGGRESSIVELY JUST AS THEY CAN BE PRACTICED BY A LICENSOR.

This point is critical because it is not possible in the abstract to decide which party is wearing the white or the black hat. Hold-ups are not a one-sided phenomenon, but can be practiced by an astute licensee that bargains aggressively just as they can be practiced by a licensor. One point to note, however, is that any regime treating litigation as a first-best alternative has to beware of the high costs and the enormous delays of that practice.

B. Recent Litigation Under the FRAND Standard

This analysis is borne out by an examination of two recent FRAND cases:

1. MICROSOFT CORPORATION V. MOTOROLA

The first illustration of potential problems is *Microsoft Corporation v. Motorola, Inc.*,[25] before Judge James J. Robart, which involved a dispute between two titans over standards, when Microsoft and Motorola were unable to agree to terms whereby Microsoft could obtain licenses to Motorola SEPs. Both sides agreed that FRAND rules applied and both noted that the purposes of the rules and procedures were to enable technical experts to devise the best standard with the lowest possible legal drag. But notwithstanding that strong agreement with respect to basic points, the two sides brought into the fray a combined 18 expert witnesses to opine about all aspects of the case before Judge Robart, who found each and every one of them credible. During the course of his decision, Judge Robart started the analysis with the oft-cited decision of *Georgia-Pacific v United States Plywood Corp.*,[26] which lists fifteen separate factors that are relevant, but not dispositive on the royalty question. It is accepted that courts have "wide discretion" on how Georgia Pacific factors are applied.[27]

The concern here is that cases like this are luxuries that no legal system can easily afford given the huge number of standards that must be set on a near daily basis. The wide range of factors suggests there could be a wide range of acceptable outcomes. We see no obvious way the rules of adjudication can be made crisper and clearer, which counsels toward a regime favoring the use of informal processes whose outcomes are accepted even if they may be less than ideal. There is simply no reason to believe that a judicial outcome in a formal setting will do any better, let alone sufficiently better to justify the enormous cost and delay. Litigation simply cannot avoid using the *Georgia Pacific* factors, as clumsy as they are. It is for just this reason that every effort should be made to strengthen industry practices that yield agreement in high fraction of standard-setting disputes.

2. IN RE INNOVATIO LP

i. Background

That conclusion is not altered by a review of the second recent SSO case In Re Innovatio LP,[28] which also involves a FRAND dispute, in the context of a suit for patent infringement, also relating to the WiFi standards promulgated in 1997. In his decision, Judge Holderman of the Northern District of Illinois separated out the FRAND issues from the other issues in the case, and once again revealed the immense difficulties that come from adjudicating SEP disputes in Court. In this instance, Innovatio took assignments from various parties, all of whom had made FRAND commitments during the Institute of electrical and Electronics Engineers (IEEE) standard setting process. The Court's decision dealt only with damages, bracketing for the moment any issue of infringement. By virtue of this new posture, Judge Holderman concluded that he had to set a precise estimate of damages, not just the "reasonable royalty range" appropriate to the determination in *Microsoft v. Motorola*, which involved not infringement, but broken-down negotiations.

LITIGATION SIMPLY CANNOT AVOID USING THE *GEORGIA PACIFIC* FACTORS, AS CLUMSY AS THEY ARE. IT IS FOR JUST THIS REASON THAT EVERY EFFORT SHOULD BE MADE TO STRENGTHEN INDUSTRY PRACTICES THAT YIELD AGREEMENT IN HIGH FRACTION OF STANDARD-SETTING DISPUTES.

In setting damages, Judge Holderman examined testimony from a large squad of 10 experts, five on each side, to whom he did not attach equal credibility. As with *Microsoft v. Motorola*, the merits of the standards dispute are not the focus here. What matters are the assumptions made about how the case should be decided within the FRAND framework. On that question three issues require attention: patent validity, reverse hold-up, and product base with patent stacking.

ii. Patent Validity

One issue in these cases is how we should take into account doubts about the validity of the patent in determining FRAND rates. The correct benchmark is how that issue is dealt with in voluntary negotiations. But the Innovatio decision gives no inkling as to what that practice might be. It would therefore be helpful to know whether the SSOs screen first for patent validity or whether they simply assume validity based on the examination conducted by the USPTO determination that carries with it some positive error rate. In dealing with this issue the court notes that its calculation of FRAND rates assumes perfect validity of the patent.

The above validity assumption leads to an important objection to the adjudication process. Why should an uncertainty be ignored when its resolution is critical to simulating a "hypothetical bilateral negotiation" between the parties?[29] One common criticism of tort damages and patent damages is that they do not reduce liability to take into account the uncertainty that is eliminated where the plaintiff prevails by a simple preponderance of evidence.[30] That objection is not decisive because of the equal and opposite bias whereby a plaintiff recovers nothing in a case where the probability of defendant's wrong is positive, but less than 50 percent. This cancellation approach assumes the probability distribution is symmetric around a mean of 50 percent, which need not prove true in ordinary two party disputes. But in dealing with disputes involving multiple plaintiffs

in identical positions, the preponderance of the evidence standard runs the risk of significant underdeterrence. If liability in each of 100 identical cases can be established at 40 percent, the correct level of deterrence is not obtained by marking them all down to zero.[31] Nor on the opposite end is optimal deterrence obtained if each of 100 cases in which liability is established at a 60 percent probability is awarded full damages. Ironically, settlements that pick an intermediate position are not always able to soften the errors of over and under deterrence. Any such power of that self-correction device depends on the liability rule established. Thus if it is certain that liability carries 60 percent probability, settlement will be at 100 percent, given that the parties bargain in the shadow of the law.

For the Innovatio case, the assumption of perfect validity leads invariably to under valuation, as more patents than should be are included in the damages base, leading to a lower recovery per patent. With no evident way to correct for this in the validity proceedings to follow, the patents ultimately found valid will receive less than their share of recoveries.

iii. Reverse Hold-Up

A second point of difficulty with the Innovatio decision relates to what Judge Holderman called the problem of the "reverse hold-up," which is the concern that implementers of a standard will infringe standard-essential patents without taking a license, thereby forcing innovators to engage in costly litigation before realizing the value of their inventions.[32] Judge Holderman was "not persuaded that reverse hold-up is a significant concern in general, as it is not unique to standard-essential patents."

The court may be correct that historically and up to current-day, reverse hold-up has not been a significant problem, at least not to the extent of entering the jurisprudence. But one reason for this salutary situation is that historically and up to current-day informal negotiations have worked well in the shadow of injunctive relief.[33] Nonetheless, the court's logic can be faulted on two grounds in this instance. The first is that merely because the reverse hold-up problem is generalized beyond SSOs does not mean it is insignificant within the field. Quite the opposite: its general importance reinforces the concern in this particular area where the need for coordination across many parties makes the reverse hold-up problem more and not less important. Second, the frequency of the reverse hold-up problem is not exogenous to the legal system, but heavily depends on the legal rules that govern these negotiations. The historical data arises both before and after the eBay decision. In the former period, issuing an injunction as a matter of course subject to narrow defenses based on such matters as laches and estoppel, is calculated to slow down this problem. The post-eBay rules are more lax.[34] The past therefore is not prologue to the future. We should be confident that any major change of remedies in the direction of the FTC recommendations will increase the risk of reverse hold-up. Given the cost and expense of litigation around SEPs, it should be clear that routine litigation, or even routine arbitration is not the answer.

FOR THE INNOVATIO CASE, THE ASSUMPTION OF PERFECT VALIDITY LEADS INVARIABLY TO UNDER VALUATION, AS MORE PATENTS THAN SHOULD BE ARE INCLUDED IN THE DAMAGES BASE, LEADING TO A LOWER RECOVERY PER PATENT. WITH NO EVIDENT WAY TO CORRECT FOR THIS IN THE VALIDITY PROCEEDINGS TO FOLLOW, THE PATENTS ULTIMATELY FOUND VALID WILL RECEIVE LESS THAN THEIR SHARE OF RECOVERIES.

iv. Patent Base and Royalty Stacking

The third issue of note in In re Innovatio is that setting the right royalty requires more than selection of a single number for the royalty. It also requires choosing the proper unit over which the royalty determination should be made. In dealing with this issue, Judge Holderman chose the "smallest salable patent practicing unit" and not some larger product of which that unit is a part.[35] The ostensible reason for this decision is the need to guard against the risk of overcompensation with respect to contributions that others make to the combined product, which could happen when one patent is "stacked" on top of another. The problem with this argument against patent stacking is that it focuses exclusively on one type of error and ignores a second. There is no a priori reason why the value of an SEP should be measured only by the smallest unit in which it is housed. In voluntary markets, the gains of a particular device will be dependent at least in part on the extent it can be resold to downstream users. If parties attach different values to the device, price discrimination is a perfectly respectable form of behavior by which to capture those downstream rents so long as there is no horizontal collusion. To the extent these practices are observed with ordinary patents, they should be permissible with SEPs as well. It is an open question as to the extent SSOs should engage in price discussions in routine cases. But it is surely a mistake to rule out this kind of evidence on an a priori basis. So long as complications are present, it is a serious oversimplification of the problem to propose, as do Mark Lemley and Carl Shapiro, that disputes over SEPs can be settled by an arbitration mechanism, similar to that used in baseball, that looks only at the basic royalty arrangement.[36] That might work in some subset of cases, at which point the parties can adopt it voluntarily. But hasty generalization carries with it real dangers. Rate base discussions are highly important, and must always consider the twin perils of over and under compensation that is at stake not only in the public utility context, but also with SEPs.

THE HISTORICAL DATA ARISES BOTH BEFORE AND AFTER THE EBAY DECISION. IN THE FORMER PERIOD, ISSUING AN INJUNCTION AS A MATTER OF COURSE SUBJECT TO NARROW DEFENSES BASED ON SUCH MATTERS AS LACHES AND ESTOPPEL, IS CALCULATED TO SLOW DOWN THIS PROBLEM. THE POST-EBAY RULES ARE MORE LAX.[34] THE PAST THEREFORE IS NOT PROLOGUE TO THE FUTURE. WE SHOULD BE CONFIDENT THAT ANY MAJOR CHANGE OF REMEDIES IN THE DIRECTION OF THE FTC RECOMMENDATIONS WILL INCREASE THE RISK OF REVERSE HOLD-UP.

3. CASCADE EFFECTS

It is in our view also dangerous to think about the resolution of FRAND disputes in isolation from the larger system of patent licensing. That system must address not only the static two party disputes like *Microsoft v. Motorola*, but it must also take into account the point that FRAND negotiations face the same cascade problem that is familiar in other contractual settings. One risk of looking at contractual arrangements through litigated cases is that it can appear that all contracts are stand-alone arrangements between two parties who act in total isolation from the rest of the world. From the ex ante perspective nothing could be further from the truth. Whether one thinks of complex production line arrangements, or complex construction projects, a single general contractor is charged with making sure that each of the subcontractors performs on time and as required. Where that is done, each contract can build on those that came before and set the stage for those that come

afterwards. But where there is a break in the chain of performance, the effects ripple up and down the line of production. Downstream producers will claim that they are entitled to damages to off-set the costs needed to adjust to the prior breaches. The head contractor may well insist that the downstream producers took the risk of those delays or errors in taking their piece of the work; or the head contractor may seek to pass the costs back up the line to the party in breach. In intellectual property cases, one license can set the stage for a dozen sub licenses, so the same lattice found in traditional businesses appears in this context.

IT IS CRITICAL TO UNDERSTAND THAT THE USE OF ANY DAMAGE REMEDY CAN LEAD TO AN ENTIRE NETWORK OF CONTRACTS, THE ENTIRE IP SUPPLY CHAIN, UNRAVELING. THE NONPERFORMANCE OF ONE CONTRACT SETS THE STAGE FOR THE NONPERFORMANCE OF THE NEXT, AND SO ON DOWN THE LINE.

No matter what the particular context, the pattern of analysis is the same, and more complex than dealing with two parties. It is critical to understand that the use of any damage remedy can lead to an entire network of contracts, the entire IP supply chain, unraveling. The nonperformance of one contract sets the stage for the nonperformance of the next, and so on down the line. It is always a disputed question whether the non-performance amounts to a breach or is excused by the mistakes that occurred higher up the line. No sensible businessperson wants to incur the risk of sorting out these multiple claims on the fly, especially when work has to go on even if the individual disputes are not resolved. Whenever interlocking arrangements are involved, the gains of performance over breach increase exponentially. It is therefore in precisely these high-velocity transactions that the damage rules should be tailored to encourage performance, which cannot be done when they are calibrated to incremental breach.

One key mistake of the FTC report is that it ignores all these distinctive features of the patent market in choosing a standard that is nowhere found in current business practices. And it does so even though it cannot show any systematic failure in the current system. The Epstein-Kieff-Spulber article referred to the position of Qualcomm with respect to its own uneventful involvement with some 84 standard setting organizations.[37] That article noted that all of the major standards organizations reported no difficulties in going about their routine work, a view that would not be explainable if the coordination problems were as profound as the FTC suggested. We see no evidence that the basic analysis has changed over the past two or three years.

IV. THE TORT SETTING

Thus far we have examined how the law should analyze the licensing agreements patentees enter into with their various licensees. But in many of these situations, it is apparent that potential licensees may make the decision not to enter into any contract at all, and choose to simply infringe. Nothing is more common than for negotiations to break down for the use of someone else's property, be it land or patented technology. At that point, a party may decide to take its chances in carrying out its plans, knowing that down the road it may well face litigation that could result in potential exposure to liability.

The question then becomes how to structure legal remedies in response to that decision. The fulcrum of analysis is that information gleaned from voluntary transactions should be carried over, whenever possible. That result can only transpire, however, if the legal system can impose strong incentives by way of injunction or damages so that it is not likely for any potential trespasser or infringer to be better off skirting the legal system

rather than working through voluntary transactions. At this point it follows that if the damages are limited to the same measure of "incremental damages" that are the calling card of the FTC report, the incentives to infringe increase, precisely because of the same time delay, administrative costs and uncertain recoveries that occur when other kinds of licensees are able to breach their arrangements with impunity. In these cases, the object of stringent remedies is to forestall the occurrence of breach in the first place by making sure potential infringers come to the table to bargain within the framework of the FRAND obligations noted above.

These cases present very different issues from cases where the damage remedies are kept deliberately low in order to induce a plaintiff to mitigate losses after the defendant has breached its obligations. In those cases, of course, there is literally no reason to think about enjoining any behavior by either party because no one has sought to circumvent the outcome of voluntary transactions, which indeed are the source of the standard limitation on consequential damages. It is for just this reason that damages in product liability cases can be too large, because they downplay the role of plaintiff's misuse in determining liability. The upshot is a vast expansion in liability with little or any improvement in safety, given the higher level of misconduct by product users.[38] But in cases where a stranger makes a conscious decision to use, without consent, the property of another, then a strong set of remedies is as relevant for patented technologies as it is for land or other tangible assets.

AT THIS POINT IT FOLLOWS THAT IF THE DAMAGES ARE LIMITED TO THE SAME MEASURE OF "INCREMENTAL DAMAGES" THAT ARE THE CALLING CARD OF THE FTC REPORT, THE INCENTIVES TO INFRINGE INCREASE, PRECISELY BECAUSE OF THE SAME TIME DELAY, ADMINISTRATIVE COSTS AND UNCERTAIN RECOVERIES THAT OCCUR WHEN OTHER KINDS OF LICENSEES ARE ABLE TO BREACH THEIR ARRANGEMENTS WITH IMPUNITY.

In the above settings, it is best to use clear rules to determine whether liability should be imposed, as it is generally unwise to search for some point on a continuous distribution, which acts as an on-off switch for personal liability.[39] A continuous set of points maps well into determination of damages as matters of degree that depend on the relative seriousness of the injury in question. The demarcation of these two functions works as well in patent infringement cases between strangers, where the question of liability is solved before the question of remedy is addressed.

Within this framework injunctive relief usually has no relevance to single, one-off situations that involve accidental harms alone. But it is a far different situation in the law of nuisance, for example, where adjacent property owners have a high probability of repeat interactions, all of which are deliberate in the sense that the defendant knows from prior experience that his conduct will necessarily produce, the next time, the harm it did on a previous occasion. In these settings, the standard remedy is injunctive relief, supplemented by a damage action that picks up two kinds of losses. First, the prior harm that was completed before the injunction has issued. Second, the commendable reluctance of courts to eliminate all background risks associated with certain activities on the ground where at the margin, the dislocation sustained by a defendant (who could be shut down if a single particle of coal dust escaped its operations) is far disproportionate to the trivial relief afforded the defendant. In light of this reluctance, injunctive relief can be introduced in stages, and coupled with clean-up damages. In the nuisance context, this means defendant could be required to limit pollution say by 95 percent, paying damages for the harm caused by the remaining five percent pollution. In effect, the

injunction is structured so that it does not apply when the defendant's cost of compliance is disproportionately high, given the plaintiff's option to minimize damages by taking such simple precautions as the use of simple filters to control low-level pollution. That same strategy can work with patented technologies, so the ostensible hardship of patent injunctions can be effectively mitigated if the defendant is given time to make the corrections in the product, without being forced to recall infringing products that have been sold, or destroy infringing products made in good faith that have yet to be marketed.

This ability to mix and match remedies is a standard feature of equitable jurisdiction, yet it was wholly overlooked by Guido Calabresi and Douglas Melamed in their article, "Property Rules, Liability Rules, and Inalienability: One View of the Cathedral."[40] Indeed their fundamental distinction between property and liability rules rests on the view that property rights allow the holder of an entitlement to keep it unless the outsider consents to meet his price. But the definition of a liability rule does not track common legal usage when it provides: "Whenever someone may destroy the initial entitlement if he is willing to pay an objectively determined value for it, an entitlement is protected by a liability rule."[41] By this definition, liability is confined to cases that would be regarded as a deliberate harm—that is the force of the phrase "if he is willing to pay." This in contrast to common usage liability rules that attach as well to accidental destruction of property in part because it is simply too late to choose a form of property rights protection. Ordinary language thus distinguishes far more sharply between deliberate and accidental harms than does the Calabresi and Melamed model, and does so to good effect precisely to avoid the inefficient situation where one person is given a naked option to take the property of another for some unliquidated amount. The ability to integrate multiple remedies makes perfectly good sense if one thinks of a system of tort remedies as incremental, where the initial cut is the injunction against future deliberate harm, but it is modified incrementally as required.

There is, moreover, in this context no possibility of using the types of specific numbers that are key to contract remedies, but there nevertheless remains carryover between the tort and contract systems. Indeed the parallel is exceedingly close, because in both tort and contract the generalized duty of mitigation usually comes out second best in any situation where there is strict sequential performance, as took place in the construction contract cases noted above. The point is of great significance because it shows how it is possible to provide a unified framework that does not view any theory of incremental damages or efficient breach as the dominant model in civil litigation generally, or in litigation over patents in particular. It is important in all cases to tailor remedies to the particular problems faced. In general, it is wise to deal with consequential damages by limiting a plaintiff's recovery to induce plaintiff to take proper precautions post breach. But by the same token, it is unwise to limit those damages when the purpose of the legal system is to control the risk that a defendant will deliberately sidestep the voluntary contracting process on the one hand, or deliberately breach existing contracts, including existing licensing agreements on the other. It is for this reason that examination of contract and tort principles points to a system of strong injunctive relief to respond to the risk of misbehavior by parties who seek to use the property—whether real property, personal property, or standard essential patents created by others—whether real property, personal property, or standard essential patents—to their own advantage.

V. CONCLUSION

The most general conclusion that follows from this article is the fundamental unity between intellectual property and other forms of property. That unity manifests itself in dealing with contractual disputes between trading

parties on the one hand, and between strangers who could, but choose not to enter into voluntary arrangements on the other. In both settings, strategic behavior is a risk that must be countered. That risk takes the form of a hold-up between contracting parties and a hold-out with strangers. But in both settings the best legal rules recognize that the dangers of strategic behavior from deliberate breach rest with both parties, not just one. It is therefore unwise to tailor liability rules on the assumption that either a landowner or a patent owner is filled with guile, while an actual or potential trespasser or infringer acts with purely virtuous motivations.

The function of a sound remedial system is to counteract these tendencies. In those instances where consequential damages are at stake, low liquidated damages are most likely to induce optimal conduct on both sides. In this connection the failure of patented technologies give rise to the same problems as any other product failure. It makes no sense to say that the party who supplies a camera with a manufacturing defect must be held liable for the cost of reshooting the entire footage from a mountain climbing expedition. That same result holds when the failure results from a design defect in a patented product. In both cases, the looming risk is best solved by downstream adjustment whereby the product user takes along two or more cameras, often of different manufacture and design, to guard against that risk.

A STRONG PRESUMPTION IN FAVOR OF INJUNCTIVE RELIEF IS AN ESSENTIAL PART OF THAT SYSTEM, AS ARE DAMAGE RULES THAT MAKE IT COSTLY FOR PARTIES TO DEVIATE FROM VOLUNTARY NORMS OF COOPERATIVE BEHAVIOR.

In contrast, in those contexts where the risk of deliberate breach by actual or potential licensees is significant, the situation changes. A strong presumption in favor of injunctive relief is an essential part of that system, as are damage rules that make it costly for parties to deviate from voluntary norms of cooperative behavior. In practice, the consequences of holdout or holdup are far smaller than the consequences of total disintegration of cooperative behavior, which flows uniquely from hold-out. The FTC makes the fundamental error of choosing the riskier path in its report. We are all well advised to resist its recommendations. ▲

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2. Partner Cravath, Swaine & Moore L.L.P., former Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office, 2009-2013.

3. For extensive commentary of the problem see Symposium, Property: A Bundle of Rights? 8 (3) Econ Journal Watch September 2011, available at http://econjwatch.org/issues/volume-8-issue-3-september-2011

4. Ronald H. Coase, The Problem of Social Cost, 3 J. L. Econ. 1 (1960). For subsequent work on the relationship of strong property rights, see Rafael La Porta, Andrei Shleifer, Florencio Lopez-Silanes & Robert Vishny, Law and Finance, 106 J. Pol. Econ. 1113 (1998)

5. For the history of these rules, see Allnut v. Inglis, 104 Eng. Rep. 206 (K.B. 1810), which worked its way into the American law of public utility regulation in *Munn v. Illinois,* 94 U.S. 113 (1876), from which develops the modern rules on rate regulation for public utilities in *Smyth v. Ames*, 169 U.S. 466 (1898) and *Federal Power Commission v. Hope Natural Gas*, 320 U.S. 591 (1944). For the doctrinal evolution, see Richard A. Epstein, *Principles for a Free Society: Reconciling Individual Liberty with the Common Good,* 282-287, 298-318 (1998).

6. On the importance of these issues, see Lon L. Fuller, *Consideration and Form* 41 Colum. L. Rev. 799, 800-801 (1941).

7. Lon L. Fuller, & William Perdue, The Reliance Interest in Contracts Damages, 46 Yale Law Journal 52, 373 (1936), available at, http://www.cisg.law.pace.edu/cisg/biblio/fuller.html#vii ; for a thorough modern critique see, Richard Craswell, *Against Fuller and Perdue*, 67 U. Chi. L. Rev 99 (2000); Richard A. Epstein, *Beyond Foreseeability: Consequential Damages in the Law of Contract,* 18 J. Legal Stud. 105 (1989)

8. The Aristotelian influence is evident in this passage from Fuller and Perdue:

It is obvious that the three "interests" [expectation, reliance and restitution} we have distinguished do not present equal claims to judicial intervention. It may be assumed that ordinary standards of justice would regard the need for judicial intervention as decreasing in the order in which we have listed the three interests. The "restitution interest," involving a combination of unjust impoverishment with unjust gain, presents the strongest case for relief. If, following Aristotle, we regard the purpose of justice as the maintenance of an equilibrium of goods among members of society, the restitution interest presents twice as strong a claim to judicial intervention as the reliance interest, since if A not only causes B to lose one unit but appropriates that unit to himself, the resulting discrepancy between A and B is not one unit but two.[6]

On the other hand, the promisee who has actually relied on the promise, even though he may not thereby have enriched the promisor, certainly presents a more pressing case for relief than the promisee who merely demands satisfaction for his disappointment in not getting what was promised him. In passing from compensation for change of position to compensation for loss of expectancy we pass, to use Aristotle's terms again, from the realm of corrective justice to that of distributive justice.

9. Fuller & Perdue, 46 Yale L.J. at 55.

10. 547 U.S. 388 (2006).

11. This most useful formulation comes from Guido Calabresi, The Costs of Accidents (1970).

12. 286 N.W. 235 (Minn. 1939).

13. See, e.g., Landis v. William Fannin Builders, Inc. 951 N.E.2d 1078 (Ohio App 2011)(dispute over exterior of a new home).

14. U.C.C. § 2-712 (3) provides: '(3) Failure of the buyer to effect cover within this Section does not bar him from any other remedy.' But that provision is immediately qualified in comment 3, which provides:

3. Subsection (3) expresses the policy that cover is not a mandatory remedy for the buyer. The buyer is always free to choose between cover and damages for non-delivery under the next section. However, this subsection must be read in conjunction with the section which limits the recovery of consequential damages to such as could not have been obviated by cover.

15. *See, e.g.*, Charles J. Goetz & Robert E. Scott, Liquidated Damages, Penalties and the Just Compensation Principle: Some Notes on an Enforcement Model and a Theory of Efficient Breach, 77 *Columbia Law Review* 554 (1977). For an early critique, see Daniel Friedmann, 'The Efficient Breach Fallacy' 18 *The Journal of Legal Studies* 1. (1989); Richard Craswell, Contract Remedies, Renegotiation, and the Theory of Efficient Breach, 61 S. Cal. L. Rev. 629 (1988).

16. Steven Shavell, Damage Measures for Breach of Contract, 11 Bell J. Econ. 466 (1980).

17. For a use of the single-owner framework, and the limitations thereon, see Richard A. Epstein, *Holdouts, Externalities and The Single Owner: Another Tribute to Ronald Coase*, 36 J. Law & Econ. 553 (1993).

18. Oliver Wendell Holmes, Jr., The Common Law (Boston: Little, Brown and Co., 1881) 301. In fairness to Holmes, he also notes the role for equitable relief, which he considers to be only an "exceptional one," *Id*. at 300-301, even though in many contexts injunctions and specific performance are often issued as a matter of course, i.e. as the presumptive remedy subject to exceptions, for example, as with laches.

19. See Uniform Commercial Code, § 2-304, following rules that date back to Roman times.

20. See U.C.C. § 2-204(3): (3) Even though one or more terms are left open a contract for sale does not fail for indefiniteness if the parties have intended to make a contract and there is a reasonably certain basis for giving an appropriate remedy.

21. See, Restatement Second of Torts § 357; Uniform Commercial Code, § 7-718.

22. See, e.g., Robert E. Scott & George Triantis, Embedded Options and the Case Against Compensation in Contract Law, 104 Colum. L. Rev. 1428 (2004).

23. Richard A. Epstein, F. Scott Kieff, and Daniel Spulber, The FTC, IP and SSOS: Government Hold-Up Replacement Private Coordination, 8(1) J. Competition L. & Econ. 1 (2012), http://jcle.oxfordjournals.org/content/8/1/1.full?keytype=ref&ijkey=1tuKfhz2vhZ1CdU . [hereafter EKS}

24. See, e.g., Alaska Packers' Ass'n v. Domenico 117 F. 99 (9th Cir. 1902).

25. EKS at 21.

26. No. C10-1823JLR (W.D. Wash. 4/25/2013)

27. 318 F. Supp. 1116 (S.D. N.Y.)

28. Minco, Inc. v. Combustion Eng'g, Inc. 95 F.3d 1109, 1119-20 (Fed. Cir. 1996)

29. 11-cv-09308 UPDATE

30. Innovatio at 8

31. For perceptive discussion, see Fennell v. Southern Maryland Hospital Center, Inc., 580 A. 2d 206, 209 (Md. 1990) See David Kaye, The Limits of the Preponderance of the Evidence Standard: Justifiably Naked Statistical Evidence and Multiple Causation, 1982 Am. B. Found. Res. J. 487

32. Steven Shavell, Economic Analysis of Accident Law 117 (1987)

33. Holderman slip at 19 (relying on Testimony of David Teece, and citing Certain Elec. Devices, Including Wireless commc'n Devices, Portable Music and Data Processing Devices, and Tablet Computers, Inv. No. 337-TA-794, at 63 (July 5, 2013) (Final).)

34. See infra at at v.

35. See infra at

36. Innovatio at 23., relying on Laserdynamics, Inc. v. Quanta Computer, Inc., 694 F.3d 51 (Fed. Cir. 2012)

37. Mark A. Lemley & Carl Shapiro, A Simple Approach to Setting Reasonable Royalties for Standard-Essential patents, SSRN http://papers/ssrn.com/so13/papers.cfm?abstact id=2243026

38. EKS, at n. 24 . ALLIANCE FOR TELECOMM. INDUS. SOLUTIONS, COMMENTS ON P11-1204 at 1 (June 14,2011) ["ATIS Comments"] ("ATIS has not experienced the hold up problem"); INT'LCOMM. FOR INFO. TECH. STANDARDS, COMMENTS ON P11-1204 at 1 (June 20, 2011)("The current officers and staff have not been notified of any active patent 'hold-up' problems with regards to INCITS standards."); TELECOMMS. INDUS. ASSOC., COMMENTS ON P11-1204 at 4 (June 14, 2011) ("TIA has never received any complaints regarding such 'patent hold-up' and does not agree that 'patent holdup' is plaguing the information and telecommunications technology (ICT) standard development processes.").

39. A. Mitchell Polinsky & Steven Shavell, The Uneasy Case for Product Liability, 123 Harv. L. Rev. 1437 (2010). The article notes the relevant dominance of market forces and direct regulation as a source of product safety. It does not, however, examine the evolution of product liability doctrine since the adoption of the Restatement, with its notable contraction of defenses based on plaintiff's conduct.

40. For application of this principle to both torts and takings law, see Richard A. Epstein, *The Takings Clause and Partial Interests in Land: On Sharp Boundaries and Continuous Distributions*, 78 Brook. L. Rev. 789 (2013); Richard A. Epstein, The Irrelevance of the Hand Formula: How Institutional Arrangements Structure Tort Liability" in Jef De Mot (ed.), *Liber amicorum Boudewijn Bouckaert*, Brugge, die Keure 65 (2012).

41. 85 Harv. L. Rev. 1089 (1972).

42. Id at 1092