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1381 WHY INCENTIVES FOR “PATENT HOLDOUT” THREATEN TO DISMANTLE FRAND, AND WHY IT MATTERS*ABSTRACT**

An increasing number of judges, legislators, and scholars, particularly in the United States, have wrongly come to believe that the commitment that standard-essential patents be licensed on “fair, reasonable, and nondiscriminatory terms” (“FRAND”) was principally created to advance the interests of technology implementers, and have too often given a preference toward implementers' interests in interpreting FRAND agreements. That premise has led American courts to take a categorically hostile view toward awarding injunctions against implementers who infringe valid standard-essential patents, fearing that the injunctive remedy would give innovators undue leverage. Indeed, American courts have been so unilaterally concerned with innovators' conduct that some have even allowed implementers to sue innovators simply for making an opening licensing offer that is later deemed “too high,” even if the implementer refused to make any counteroffer at all. An implementer-centric view of FRAND has also caused several courts to conclude that innovators are not entitled to any share of the commercial benefits arising from the standardization of their technologies, and that all such benefits must go to implementers alone.

This Article argues that an implementer-centric view of FRAND's origins and purposes is false. FRAND is a contractual agreement that reflects a voluntary reciprocal exchange of benefits and obligations driven by the need to solve significant coordination problems in the face of otherwise prohibitive transaction costs. As part of that bargain, innovators agree to disclose their latest, confidential discoveries to standard-development organizations and to waive their injunction rights as to eventual patents on those discoveries, in exchange for contractual protection against “patent holdout” by implementers. Those implementers are then permitted to use standard-essential patents on the condition that they agree to pay fair and adequate royalties for that use, with the royalty amount to be set through mutual good-faith negotiations.

*1382 Accordingly, this Article stresses that FRAND is not intended to be, and should not be interpreted as, a one-sided transfer from innovators to implementers. Rather, implementers too owe a significant duty to negotiate FRAND licenses in good faith--a duty that many courts have overlooked and underenforced. This Article demonstrates that implementers' good faith obligations are a critical component of the basic FRAND architecture and that enforcement of those obligations is strictly necessary to the continued development of innovation-driven standards.

This Article further observes that the FRAND bargain is not simply meant to give innovators a way to monetize their intellectual property. Rather, and perhaps more significantly, FRAND creates an agreed bargaining framework that allows implementers to access innovators' otherwise-confidential discoveries-- inventions so recent that they are not otherwise disclosed in patents or published applications. In this way, FRAND supplies a solution to an iteration of Kenneth Arrow's paradox of information, enabling the standards development effort to yield commercial benefits that would not exist absent innovators' voluntary participation. Stated otherwise, innovators agree to give implementers access--and a fair license--to their most groundbreaking technologies because innovators believe that implementers will reciprocally later agree to take a license in good faith for using those highly-valuable innovations. This Article shows both theoretically and empirically that courts' failure to appreciate these aspects of the FRAND bargain, combined with their overreliance on liability rules (i.e., damages over injunctions) incentivizes the very patent holdout problem FRAND was intended to avoid. That “efficient infringement” outcome, in turn, has motivated

innovators to reduce their participation in FRAND bargains, threatening to unravel a massive innovation-commercialization marketplace and its innumerable positive externalities for all parties.

To reverse these harms, this Article recommends that courts automatically issue an injunction where an implementer is found to infringe valid FRAND-committed patents that it did not attempt to license in good faith. This Article also recommends that a proper FRAND licensing rate should include some portion of the benefits achieved through standardization of the innovations in question.

More broadly, this Article suggests that courts, policymakers, and academic commentators have wrongly favored implementation over innovation--“things” over ideas--unwisely frustrating the emergence of an “ideas economy” that should rightly assign significant profits to upstream innovators and not to the low-margin manufacturing firms that specialize in turning those innovations into tangible products.

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*1383 I. INTRODUCTION

In this Article, we wade into an intellectual thicket that ultimately reduces to one question: How should courts and policymakers interpret and allocate the corresponding rights and obligations on both sides of the FRAND bargain--that is, the contractual agreement between technology innovators¹ and implementers² to license standard-essential patents on fair, reasonable, and nondiscriminatory terms? And more specifically, to what degree should courts and policymakers continue to fear the possibility of “patent holdup”--a chief concern underlying a number of regulatory and judicial interventions in the space for more than a decade--as opposed to the countervailing risk of “patent holdout” or “efficient infringement”?

This issue has made it right to the top of the political agenda. As this Article was being prepared for publication, its topic became the subject of an address on March 16, 2018 by Makan Delrahim, the Assistant Attorney General for Antitrust. In a speech titled, *The “New Madison” Approach to Antitrust and Intellectual Property Law*, Mr. Delrahim relied on an earlier draft of this Article to support, among other points, the observation that *1384 “proponents of using antitrust law to police FRAND commitments principally rely on models devoid of economic or empirical evidence that hold-up is a real phenomenon, much less one that harms competition.”³ The chief function of this Article is to make good on that proposition by offering a comprehensive discussion of the considerations that have led both Mr. Delrahim, and us, to reach that conclusion. In particular, we demonstrate and conclude that courts and policymakers in the United States should be far more concerned with the risk of “patent holdout”--a problem they have not only largely overlooked, but have actually exacerbated through a series of missteps in recent years.

We use the terms “patent holdup” and “patent holdout” as they have been used in the extensive patent literature, and in the general economics literature on holdup and holdout problems. In general, by “patent *holdup*” we mean the theoretical claim that innovators of standard-essential patents attempt to extract excessively large royalties from implementers after those implementers have committed to a particular technological standard that requires the use of the patent(s) in question--that is, a standard that renders the patent(s) “essential.” Under the “patent holdup” theory, the royalties in question are excessively large because they exceed the “true” value of the invention(s) in question, and are derived (so the theory goes) because the innovator can leverage the implementer's sunk cost in committing to the standard to extract more than a fair royalty.⁴ By “patent *holdout*” we mean the converse problem--that an implementer refuses to negotiate in good faith with an innovator for a license to valid patent(s) that the implementer infringes, and instead forces the innovator to either undertake significant litigation costs and time delays to extract a licensing payment through a court order, or else to simply drop the matter because the licensing game is no longer worth the candle. We also use the term “efficient infringement” synonymously with “patent holdout” here.

The “holdout” or “efficient infringement” problem is, of course, not limited to the standard-essential patent context or even to patent cases as a *1385 whole. The ongoing saga between Oracle and Google regarding Google's copying of 11,500 lines of Java code indicates that “efficient infringement” is an (unfortunately) attractive business strategy in the copyright context as well, where the ability to take another's computer code while refusing to pay for a license can result in wealth transfers in the billions of dollars.⁵ By way of background, Google failed in 2005 to obtain a license from Sun (now Oracle) for implementing Java in Android mobile devices.⁶ When Google failed in its own efforts to develop critical components on its own, it decided to lift them from Oracle--copying 11,500 lines of Oracle's code verbatim into Android.⁷ Google then undercut the market for products that incorporated (or could have incorporated) Oracle's technology for a fee, refused to pay Oracle, and chose instead to litigate.⁸ Thirteen years later, the dispute continues to work through the courts, despite two trials and two decisions on appeal. Most recently, the Court of Appeals for the Federal Circuit rejected Google's fair use defense and remanded the case for a trial to determine the extent of Google's liability for damages.⁹ Here is a case where injunctive relief is called for to stop the theft--Google made all of its liability arguments and lost. It should have to settle, redesign its products to eliminate infringement, or be enjoined. Otherwise thirteen years of litigation can quickly become eighteen, with no end in sight--a modern version of Dickens's Bleak House.¹⁰ Yet the presiding district court judge-- having twice ruled for Google and been twice reversed-- appears to show little concern for Oracle's predicament, and is unlikely to exercise his discretion to award an injunction.

While many of our observations here apply outside the context of standard-essential patents and FRAND, we nonetheless focus on that microcosm precisely because the question of FRAND's proper interpretation is at the forefront of a number of broader issues that will ultimately shape this century's “ideas economy.”

To address that question, Part II begins with an explanation of how FRAND bargaining was developed and how it functions in the context of *1386 Standards Developing Organizations (“SDOs”), which establishes the institutional framework for these negotiations. Part II approaches that question from its intellectual and factual foundations by first considering the market forces that engendered the FRAND framework, the nature of the FRAND agreement, and the purposes it is intended to serve. Part II then considers how FRAND obligations relate to traditional rate-making operations of common carriers and public utilities, and the lessons to be learned from the good-faith bargaining obligations in labor-management relationships, which are shaped by very different political forces. This discussion highlights the innumerable benefits that a properly functioning FRAND regime permits, as well as the mutuality of consideration that is necessary, both *ex ante* and *ex post*, to hold that voluntary regime together.

In particular, at their inception, FRAND obligations arose as contractual commitments intended to serve the interests of *both* innovators and implementers by making both sides to the exchange better off than before. To be sure, that contractual point has been recognized in the abstract in many cases,¹¹ but nonetheless it has been insufficiently appreciated in application. A proper understanding of FRAND principles thus begins not with a view toward patent law, antitrust law, or regulatory policy, but with reference to the underlying contractual architecture and *quid pro quo* of the FRAND bargain. Since FRAND contracts are willing agreements between highly competent parties, it logically follows that such agreements, correctly interpreted, must generate valuable benefits to innovators and implementers alike.

No one should underestimate the difficulty of realizing these benefits. In most situations it is easier to reach an agreement, or to develop a series of customary practices, when the two parties stand in a symmetrical relationship with each other as opposed to when they occupy distinct roles. Thus, the customary obligations of partners to each other are easier to determine than those of a buyer and seller, or a landlord and tenant, or a licensor and licensee. In these last three cases, the gains from trade may be enormous, but it is no longer possible to adopt parallel obligations on both parties. Therefore, it is necessary to determine how the differences in role *1387 determine obligations, a more complex problem for which the dominant solution is less clear and harder to ascertain.¹²

Part III applies these observations to a discussion of the prior academic contributions and concludes that, in view of the particularly high transaction costs at play and the significant informational advantage the parties hold over the courts, a correct and socially efficient treatment of FRAND disputes should shift the parties' incentives toward negotiated solutions through a recognition of strong property rights. To achieve that aim, injunctions should be the presumptive remedy in infringement actions involving declared standard-essential patents. The defendant, in turn, can rebut that presumption (or obviate the question of remedies altogether) upon a showing that its own pre-suit negotiation conduct was in good faith--that is, that the defendant either made a good faith licensing offer in view of FRAND or else was justified in making no offer at all because it has proven noninfringement or invalidity of the patent(s) in suit. The damages remedy would occupy a subordinate, yet important

position--growing in significance where mutual good faith discussions have reached a genuine impasse or when it is necessary to determine compensation for attorneys' fees that are incurred due to a breach of the patent holder's good faith covenant.

By contrast, any principal reliance on liability rules comes out second best because it is likely to miss the reciprocal benefits underlying the voluntary FRAND agreement and encourages implementers to engage in inefficient and opportunistic “holdout” from good faith discussions. With this in mind, Part III proposes a mixed system that is subtler and more flexible than an all-or-nothing choice between “property rules” and “liability rules,” as those terms were used by Guido Calabresi and A. Douglas Melamed in their path-breaking article on the subject.¹³ That article, in an unspoken artificial limitation, only considered legal remedies that embodied the pure form of one or the other type of remedy, without asking what mix of the two forms of relief could outperform the exclusive reliance on one remedy or the other.¹⁴ This approach also diverges from the writings of commentators like Mark Lemley and Carl Shapiro--who have *1388 expressed a near-categorical aversion to the injunctive remedy for fear of the risks of “patent holdup” and “royalty stacking.”¹⁵ Instead, it incorporates the insights of others, like Robert Merges, who have recognized the superiority of strong property rights as a starting point for resolving the high transaction costs that are inherent to intellectual property exchanges in general and patents in particular.¹⁶ The FRAND agreement is itself an example of the positive effect of a presumptive injunctive remedy, for FRAND obligations owe their existence to the presumption of injunctive relief. Part III also discusses the example of patent pools, which present another (and complementary) market solution to the problem of patent transaction costs, and further counsel against hasty judicial interventions into the complex machinations of the innovation marketplace.

Finally, Part III describes the detailed empirical studies that have all come to the same conclusion: theoretical concerns regarding patent holdup and royalty stacking have not borne out in industries subject to innovation-driven standardization, such as mobile handsets. Instead, the evidence points to the sharp lowering of prices, continuous innovation, low aggregate patent royalty payments, and increasing market penetration.¹⁷

Part IV then tests the framework described in Part III against recent court decisions and an intellectual property rights (“IPR”) policy revision by the Institute of Electrical and Electronics Engineers (“IEEE”).¹⁸ In so doing, it identifies the significant distortions and social inefficiencies that arise from ex post, one-sided revisionism of the FRAND contract, which evidences the unjustified preference for liability rules over property rights. Part IV proposes, in particular, an alternative approach to the IEEE's policy revision and to decisions such as *Apple v. Motorola*¹⁹ and *Microsoft v. Motorola*²⁰--all of which have failed to take a balanced view of the duty of good faith and fair dealing underlying the FRAND agreement. In particular, *1389 implementers should be held to a reciprocal duty to negotiate a FRAND license in good faith, the breach of which should automatically trigger an injunction upon a finding that the patents at issue are valid and infringed, unless the innovator's pre-suit offer is itself found not to have been in good faith. In this context, we discuss the European Union Court of Justice's decision in *Huawei v. ZTE*²¹ as well as the United Kingdom High Court's more recent decision in *Unwired Planet v. Huawei*,²² both of which have advanced rules similar to those proposed here. Part IV then turns to a discussion of another aspect of the IEEE's policy revision, as well as two Federal Circuit decisions, which have incorrectly deprived innovators of any share of the benefits from the standardization of their technological contributions, creating further distortions in the FRAND framework with significant negative follow-on effects in the innovation marketplace.

Part V concludes with a broader discussion of the significance of these issues to the emergence of the “ideas economy,” in which it has become more critical than ever both to reduce transaction costs around the patent right and to protect and reward innovation. Part V observes the sharp disconnect between the philosophical underpinnings of redefining the FRAND contract in favor of implementers--a primacy of implementation over innovation--and the much larger forces shaping the future of the American and global economies. The current preference for, as it were, “things over ideas” is rooted in an implicit premise captured by the maxim, “easier said than done.” In other words, because our historical economic experience has taught that ideas are “easy,” but their execution is difficult, modern courts and commentators have exhibited a specious attraction to the notion that “building” tangible objects--even if through means like programming software--should capture more value than the simple contribution of “ideas” to that endeavor. Yet this conventional view is dangerously outdated.

Today, the United States is at the forefront of an ideas economy in which new forces such as globalization, 3D printing, and robotics (to name a few) are rapidly rendering it much easier to build an embodiment of a great innovation than to develop the innovation itself. Thus, for instance, two of the five top-selling smartphone manufacturers in the world are now Oppo *1390 and Vivo²³--relatively new entrants with no history of developing significant smartphone innovations either as part of

SDOs²⁴ or independently at a device-specific level. As another example, Tesla has vowed to build fully automated factories in which robots alone will build its fleet of vehicles without human involvement.²⁵ As yet a third example, ARM--the company behind the design of virtually every smartphone processor chip--does not make or sell any actual chips.²⁶ Instead, it designs groundbreaking and fundamental chip architecture, and licenses its architectural designs to nearly every major player in the smartphone space.²⁷

In order for the ideas economy to develop and thrive in its most dynamic and accessible form, it is imperative that ideas be valued, protected, and rewarded in accordance with their contributions, without relying on outdated presuppositions favoring incumbents who own the means of production.

Thus, as this Article demonstrates, the prevailing mishandling of FRAND is a trend in precisely the wrong direction. As such, these recent developments are part of an important and broader misstep away from protecting and valuing intellectual property at precisely the wrong time.

II. UNDERSTANDING FRAND: THE MANY GAINS FROM COOPERATION

The simple fact of standardization, independent of the specifics of any particular standard and absent any innovation, accrues important benefits to ***1391** implementers. The cellular telecommunications market, for instance, is composed of two critical categories of participants--handset makers and cellular carriers--who must coordinate around innumerable implementation details to make the market function. Standardization, in such cases, solves coordination problems more efficiently than a series of bilateral negotiations. It also enlarges the market on both sides by growing the addressable consumer base through interoperability and network effects. In addition, it reduces marginal costs by reducing the number of options that each company must support and decreasing the contracting and coordination costs that would accrue absent standardization. Thus, implementers' attraction to setting standards is easy to understand.

But standardization alone captures only a sliver of the coordination gains that are achievable in technology-driven markets. Once the standardization game is under way, it is not enough to merely set default rules (like picking a side of the road to drive on). In context, the key choices are not between two inconsequential alternatives but rather among rival technologies, some of which are necessarily better and some of which are necessarily worse. Certain superior technologies only work as alternatives, not complements, to certain inferior technologies. It is therefore not enough to simply pick a baseline and let individual firms find their way to better implementations. Rather, the choice of technologies becomes a focal endeavor, for there is no inherent reason for implementers to lock themselves into offering consumers a less compelling product than what the forefront of technology would otherwise allow. Innovation-driven standardization also provides a form of competitive insurance by reducing each implementer's risk in a winner-take-all environment in which only a few companies offer critical innovations that leave others fully in the dust, e.g., by offering 4G LTE while other companies are only capable of offering 3G products. Behind the veil of ignorance with respect to comparative innovation, competitors will naturally seek to reduce the catastrophic risk of disruption by coordinating around a high baseline of innovation adoption. At the same time, incorporating key innovations into technical standards generates further marginal cost efficiencies with respect to marketing. As the number of companies advertising and explaining a next-generation technology increases, the necessary marketing expenditure per company decreases. The credibility of the message is enhanced because it is repeated consistently by several firms at once.

The desire to standardize innovations, however, gives rise to a series of challenges. Most notable are the questions of how to identify and efficiently license the innovations that should form the standard. With respect to identifying the set of innovations for consideration, one possible solution is ***1392** to look only to those innovations that have already resulted in issued patents, which are necessarily disclosed in publicly available publications. That approach proves suboptimal, however, as the most attractive innovations are often the newest ideas, which by their nature have not been disclosed in either issued patents or published patent applications. Implementers thus cannot learn about such discoveries by searching for them among public records; the information must come to them. At this point, the transaction challenge becomes particularly acute: if an innovator discloses its as-yet-unprotected invention, it has nothing left to sell. Alternatively, implementers cannot buy what they do not know is for sale--a variation of Arrow's "paradox of information."²⁸ The complications do not end there. Once a technology has been selected for incorporation into the standard, the question becomes how rights to the technology should best be acquired. Securing licenses to all of the necessary patents or patent applications prior to formally promulgating the standard will entail huge transaction costs.²⁹ The alternative of selecting the standard first and negotiating patent licenses second, however, is no

less problematic: since each patent holder holds the right to exclude, any single patent holder may refuse to grant a license and instead seek an injunction in order to capture monopolistic rents through a conscious strategy of “patent holdup.”

From the implementers' perspective, the solution is to form an innovation marketplace--that is, a means for innovative ideas to be presented to the implementers--thus reducing search costs, creating information aggregation effects regarding “state of the art” technologies, and providing access to the latest as-yet-unpatented discoveries. This, in turn, allows implementers to specialize more heavily in implementation instead of devoting inefficient and duplicative resources toward innovation. Critically, these cooperative efforts create an opportunity to contract around the risks of injunctions and patent holdup by imposing “terms of entry” restrictions on innovators who elect to participate in that marketplace.

But innovators will have no interest in entering such a marketplace unless they first receive assurances that they can expect a reasonable risk-adjusted profit that exceeds their opportunity cost. Most significantly, innovators would need assurances that, if they disclose their latest nonpublic discoveries and waive their categorical right to exclude unauthorized use of their inventions, they will be compensated through a ***1393** fair share of the ensuing benefits that leaves them better off than they would be by self-commercializing their inventions and maintaining exclusionary rights to their intellectual property. After all, once they have disclosed their inventions to implementers and waived their categorical right to an injunction, innovators have little leverage against the risk of widespread infringement and the need for costly litigation--that is, “patent holdout” or “efficient infringement.”

Yet these challenges have not proven insurmountable. To cut the Gordian knot, innovators and implementers have worked through standards developing organizations (“SDOs”) to develop the FRAND framework--a contractual solution whereby implementers agree to take a license to any standard-essential patent on fair, reasonable, and nondiscriminatory terms (“FRAND”), and to negotiate such terms in good faith. Innovators reciprocally agree to bring their latest discoveries to the marketplace, to notify the SDO of intellectual property rights (including patent applications) that would be infringed by the use of such disclosed technologies, to offer FRAND licenses for any eventual standard-essential patents (“SEPs”) in good faith, and to forego their categorical right to exclude willing licensees from the use of standard-essential innovations.³⁰ Critically, innovators are not forced or legally required to make FRAND commitments, but rather do so willingly and voluntarily.³¹

The FRAND contract is thus meant to solve a host of coordination problems between potential bilateral monopolists seeking technology-driven standardization. Their goal is to create innovation-driven standards that reward the efforts of each contributor. The FRAND agreement for standards development allows the emergence of an innovation marketplace that yields massive positive externalities, including benefits for downstream customers.³² This win-win outcome is consistent with Robert Merges' ***1394** observation that “in the presence of high transaction costs, industry participants have an incentive to invest in institutions that lower the costs of IPR exchange.”³³

Indeed, as demonstrated above, the FRAND agreement owes its existence to the immutability of two significant transaction costs: the perceived threat of the injunction remedy and the lack of public disclosure of the most recent innovations. Because implementers fear that innovation standardization may give rise to ex post injunctions and “patent holdup,” they are motivated to bargain ex ante with innovators to establish voluntary institutions that facilitate contractual solutions.³⁴ And because innovators' latest discoveries are not yet published in patents or patent applications, implementers need to offer innovators some substantial consideration to motivate them to reveal those discoveries, which can then be incorporated into workable standards. In exchange, innovators naturally seek assurances against “patent holdout” or “efficient infringement” by way of promises of adequate risk-adjusted and opportunity cost-adjusted profits whenever their inventions become standard-essential.

This mutuality of considerations has been at the heart of the voluntary FRAND bargain from the outset, given that any risks of holdup or misappropriation of information are bilateral--that is, such risks work in both directions. Unfortunately, the innovation marketplace it enables quickly unravels once the bargain is revised or reinterpreted in ways that shortchange innovators. Thus, in 1992, the European Commission observed that “the incentive to develop new products and processes on which to base ***1395** future standardization will be lost if the standard-making process is carried out without due regard for intellectual property rights.”³⁵

The European Telecommunications Standard Institute (“ETSI”)--one of the most active SDOs, which has been largely responsible for developing generations of cellular telecommunications standards--has learned that lesson the hard way. As Roger Brooks and Damien Geradin recount, ETSI's initial efforts at crafting an IPR Policy sought to “advance” the prior norms by

increasing restrictions on innovators through market-limiting measures such as maximum royalty rates, “automatic licensing,” total waivers of the injunction remedy, and mandatory arbitration.³⁶ These efforts, however, were met with fierce opposition and criticism from both members (some of whom threatened to withdraw from ETSI) and other, more experienced SDOs.³⁷ Ultimately in 1994, ETSI abandoned its innovation-restrictive policies and adopted a traditional FRAND policy that largely remains in place today.³⁸

Thus, in its current form, the ETSI IPR Policy provides that its “objectives” are to “seek[] a balance between the needs of standardization for public use in the field of telecommunications and the rights of the owners of IPRs”; ETSI particularly notes that “IPR holders ... should be adequately and fairly rewarded for the use of their IPRs in the implementation of STANDARDS and TECHNICAL SPECIFICATIONS.”³⁹

That approach is consistent with other SDOs, like the International Telecommunications Union (“ITU”), which has stated that its IPR policy seeks “a working balance between the interests of SEP owners and implementers ... by ensuring that owners of intellectual property will be motivated to contribute their patented technologies to the standards-development process and that the standards incorporating these technologies will remain widely available to implementers.”⁴⁰

***1396** Notably, ETSI's 1994 FRAND framework was deliberately vague, leaving flexibility for parties to bilaterally negotiate its meaning in the context of their particular circumstances. Since adopting its 1994 IPR Policy, ETSI has twice rejected efforts to narrow and more tightly define FRAND.⁴¹ The incomplete nature of the FRAND contract is therefore neither an oversight by SDOs nor an invitation for courts to fill in the gaps or clarify the boundaries, but rather an architectural design feature of the FRAND framework that has been critical to its success.

Indeed, that same structural flexibility was significant to the success of traditional forms of rate regulation rules that deal with common carriers and public utilities, to whom the FRAND rules originally applied and who--by virtue of their monopoly position--were long obligated to hold themselves out to provide services to all parties on fair, reasonable, and nondiscriminatory terms.⁴² And a comparative analysis of FRAND's workings in that earlier context further informs a proper understanding of the FRAND bargain with respect to standard-essential patents.

To be sure, the complications inherent in the FRAND framework were more tractable in the earlier rate regulation context than in the patent space, and for three reasons. The first has to do with the nature of the regulated businesses. Common carriers and public utilities are all massive, unified operations whose value is embodied in a few key facilities of enormous value, such as power plants or distribution networks. The standard ratemaking procedure to deal with public utility regulations assumes that there is no close substitute to the particular public utility, which is required to justify investment of heavy sums in the construction of its plant before it obtains any return from its more or less captive customer base. The large size of the investment means that the rate calculations are performed on a coherent set of assets and not on large, shifting portfolios of smaller assets that comprise the whole. Second, the rate of technical change in the public ***1397** utility and common carrier space has traditionally been relatively slow, so it is possible to make long-term calculations with a fair degree of certainty. And third, the rates are generally given to large classes of customers on a take-it-or-leave-it basis. Traditional rate regulation, therefore, does not contemplate the second round of negotiation that is perfectly routine today between the holder of a SEP and its infringers, who vary widely in size and their individual usages of their product in question. For instance, with certain key standards, such as those for Wi-Fi, the stakes are far larger than they are for any physical plant, given that these key standards work themselves into a staggeringly large set of downstream applications by large numbers of unrelated parties. Oftentimes, the value of the SEP can be determined only in relationship to the ultimate use that the licensee makes of the patent in its own business.

Nonetheless, there are certain features of standard rate regulation that do apply to FRAND negotiations over SEPs. The first of these is that rate regulation is intended to make sure that any given monopolist does not receive more than a competitive rate of return for the use of its products or services. One corollary of this proposition is that the system of rate regulation should never introduce into its rate structure cross-subsidies among different classes of users.⁴³ Those subsidies are not sustainable in competitive markets because those customers who are called upon to supply the subsidy will be able to switch easily to another supplier, thus rendering the entire cross-subsidization project a failure. But given that there are no close substitutes to a common carrier or public utility, the cross-subsidy possibility is real, but also destructive. The moment that these cross-subsidies are allowed, it introduces an element of jockeying whereby politically influential groups will seek to exert these disguised wealth

transfers in their own favor. The new arrangement thus poses the well-known dangers of rent-seeking behavior that always arise when property rights are made indefinite, a result which in this instance is by design.

The traditional systems of rate regulation took steps to guard against transfer payments, such as those that might occur when the passenger business of a railroad is taxed to subsidize its freight division,⁴⁴ when the rate of return on a regulated portion of the business is reduced because the firm made sufficient profits from its unregulated activities,⁴⁵ or when a *1398 regulated firm is denied a guaranteed rate of return in any given period based on the regulator's promise to make up the shortfall in some future period.⁴⁶ These relatively hard-edged rules do not displace the higher level of judicial deference given in ratemaking cases when there is no clear method of accounting. For example, in the illustration above, the joint costs that are incurred to ship both freight and passenger cars on the same train. One danger with the common legal position that damages should be the first remedy in patent disputes is that, in the context of multiparty deals, it encourages the introduction of cross-subsidies through the back door.

The success of a rate-making system in dealing with these risks depends heavily on the level of scrutiny that is given to the entire operation. The low “rational basis” standard of constitutional law invites a level of cross-subsidization that is not tolerated when either an intermediate-scrutiny or strict-scrutiny standard is applied. In both these cases, the central test for government coercion is whether it brings the overall system closer to the competitive norm that can never be reached. But the opposite approach arises when the legal system introduces a set of institutions that seeks to create the very holdout problems that sound systems of rate regulation seek to eliminate.

The most instructive example of how these negotiations can backfire arises with mandatory collective bargaining under the National Labor Relations Act (“NLRA”),⁴⁷ the permutations of which have governed management-labor relations since 1935. Under the basic scheme, management is placed under a duty to bargain in good faith with a union that has been selected by majority vote within a designated bargaining unit, after which the union functions as the exclusive representative of all members of the unit, whether they voted for the union or not. Interestingly enough, the Taft-Hartley amendments to the statute added a duty on the union to negotiate in good faith with management in an effort to reach a deal. The turbulent history of labor relations shows that it is difficult to make these arrangements work in light of the high emotions that are often on both sides of the table. Indeed, the structure condemns these bargaining relationships to failure in ways that the FRAND negotiations are consciously designed to avoid.

As with FRAND--type arrangements, labor negotiations revolve around two related axes. The first addresses the internal relations among various union members over the division of the potential gains from *1399 negotiation with management. These issues are acute because unions often represent workers that have inherent conflicts with each other. Some workers have seniority that others do not. A small fraction of union members may have more skilled jobs than the majority of the members. To deal with this question, the law imposes a duty of fair representation on the union representative. This responsibility, however, has proven extraordinarily difficult to enforce judicially, so that in practice these conflicts are resolved by protracted and informal negotiations.⁴⁸

The second axis concerns the pattern of negotiation between the union and management under the good-faith umbrella that applies to both sides. The question is what good faith means. In some contexts, it has a clear meaning. For example, a purchaser acts in good faith when she buys property from a party whom she thinks is the rightful owner, but who in fact is not. The good-faith defense often protects that innocent purchaser from a suit by the true owner to recover the property in question, leaving the owner with only a typically futile action against the thief or converter for damages. Closer to home, the duty of good faith in connection with partnership arrangements requires each partner in his various business dealings to weigh the interest of his partners equally with his own. By taking into account all costs and benefits, the duty encourages all parties to maximize the good of the whole. When followed uniformly by all such partners, it leads to the highest level of output. As an offshoot of that definition, it is commonly held that an insurance company that defends a claim against an insured party under a policy that offers only limited coverage is required to weigh the interest of the insured as equal to its own, which is the only way to minimize the expected cost of the suit, taking into account both the costs of litigation and settlement.⁴⁹ In all of these cases, the use of a good-faith standard tends to lead to an efficient resolution of conflicts of interest between the parties.

Unfortunately, this definition is not transferable to the labor context, where the two parties stand in a stark opposition to each other. In these cases, the resulting bilateral monopoly situation is inferior to the results that are obtained in a competitive market. Transaction costs are higher, the risk of bargaining breakdown is greater, and the prospect that workers will, through this system

of negotiation, push wages above competitive levels necessarily distorts the operation of product markets. In these adversarial *1400 circumstances, there is no way in which the duty to bargain or act in good faith can either ensure the security of transactions or reduce conflicts of interest, which is its role in these other contexts.

The difficulty of the good faith concept as it applies in labor law is revealed through Section 158(d) of the NLRA, which provides:

For the purposes of this section [on the definition of unfair labor practices], to bargain collectively is the performance of the mutual obligation of the employer and the representative of the employees to meet at reasonable times and confer in good faith with respect to wages, hours, and other terms and conditions of employment, or the negotiation of an agreement, or any question arising thereunder, and the execution of a written contract incorporating any agreement reached if requested by either party, but such obligation does not compel either party to agree to a proposal or require the making of a concession.⁵⁰

There are several instructive points in this solution that carry over to the FRAND obligations in the patent space. The first is that the duties to bargain in good faith are the *mutual* obligation of the employer and the union, notwithstanding the obvious asymmetry in their respective positions: the employer represents a coherent firm, while the union represents an array of workers with multiple and often clashing interests. The second is that imposing mutual duties on the parties does not exactly clarify what those duties are. The NLRA language quoted makes it clear the duty to bargain in good faith is not a duty to make specific concessions to the opposite side. Judicial decisions have held that this provision means what it says, even on the question of dues check-off.⁵¹ This check-off arises when the union wants management to deduct worker dues from their paychecks to spare the union the serious risk of non-collection of dues from wayward employees (some of whom may not even be union members). The refusal to follow this no-concession rule would put the courts in the impossible position of having to decide which party should make what concession in the event of an impasse.

At this point, the overall system of private voluntary negotiations would surely become unglued. Once it is clear which side is favored by the arbitrator, the parties will then bargain in the shadow of that external yardstick. After all, why should either party yield to any terms that are worse than those which it can get from the all-powerful third party? Hence by a combination of direct order and influence, the judicial decision maker will take over an entire proceeding that it is singularly ill-suited to manage due *1401 to innumerable workforce and business-model differences among thousands of different union shops. Nonetheless, if the courts will not force the parties to an agreement, it is clear under current Supreme Court law that the employer can be required to disclose financial information on its overall profitability in the hope that a greater common pool of information will narrow the bargaining space and increase the likelihood of an agreement.⁵² In modern times, the incidence of strikes has gone down, but that change is best explained by the increased competitiveness of the employer's business environment, which sets the backdrop for all labor negotiations.

The notable exception to that rule comes in breakdowns in negotiations between unions and public employers in such sectors as transportation and education, both service industries, in which a cessation of service is felt immediately by a huge group of third parties whose serious economic losses are not diminished because the legal system tends to dismiss these losses as “incidental.” Public unions, moreover, present the additional danger that they are on both sides of the bargaining table, given that the power of their well-oiled political machines can drive the election of key political officials.⁵³ Since most of these local services are territorially based, these unions do not have to fear new entry, and hence are in a position to drive up their power in ways that leads, for example, to rules on job security and pensions that pose a deep threat to the overall political system. Further, it is hard to undo these changes since these pension benefits typically vest as of the time of employment, and thus for current employees cannot be cut back even for future payments under current contracts.⁵⁴ The good faith obligations for negotiation in this context do little to prevent the breakdown of labor markets for public employees. The situation is quite different in the private sector. The decline of tariff barriers and the deregulation of many key sectors, like telecommunications, reduces the potential for monopoly gains, and therefore undercuts the power that a union could enjoy when pitted against an employer that is a sole supplier in a larger marketplace.

*1402 For these purposes, the key question is why the good-faith negotiations that are undertaken in the context of FRAND do not exhibit the pathologies that the good-faith obligations cannot effectively control in the context of labor relationships.

The relevant features of SDOs help supply an explanation that covers the broad range of cases.⁵⁵ The initial point is that labor negotiations under the NLRA are negative sum games in which any bargain that ultimately emerges is going to be less efficient than the competitive solution in which firms are allowed, at low cost, to make workers take-it-or-leave-it offers. These offers in competitive markets will have to be high enough to attract workers, but low enough to permit firms to sell their own goods and services to their customer base. The FRAND negotiations will not be as efficient as the competitive labor markets, but they do share this characteristic. Indeed, FRAND negotiations are positive sum. The parties are not put together by judicial fiat. Instead, each party that enters into these negotiations hopes to help set a standard that will improve the economic prospects of all the firms involved by allowing them to cooperate with each other by designing a better product leading to a larger market for all participants' inputs.

The success of these negotiations therefore depends on the ability to elicit cooperation from all members. One way that this is done is to separate the standard development process from the competitive process that will take place once the standards have been put in place. Accordingly, the standard development operation is handled by engineers and other technical experts who are separated from the business arms of their various firms. That separation is enforced because the standard chosen is not set with respect to any given patent. Rather, the standard is first chosen on technical grounds, albeit with the assurance that known essential patents will be available for license on FRAND terms. Only later is it decided which patents read onto the standard that has been selected. It is thus common that a standard championed by representatives of firm A will require the incorporation of technology patented by firm B, or a set of processes that have yet to be reduced to patents by anyone. In effect, these negotiations are conducted, as it were, behind a veil of ignorance in which the many participants will best advance their own interests if the organization sets a standard preferred by the greatest number of members. Indeed, it is common in many SDOs for the representatives of the end users to participate in the discussion about standards even if they are not in a position to vote on what standard is set. Their simple presence in the room is an added check against various forms of opportunism, for their voice in these deliberations has a *1403 key role in determining how the particular vote on any standard comes out. In addition, there is generally an obligation to disclose any patent that a firm has that reads onto a standard, so the potential conflict of interest is further limited. Unlike the labor situation, the parties know that they do not enjoy any monopoly position because the selection of any given standard does not guarantee that some rival standard will not emerge to deal with the same problem; all the parties therefore are aware that any unilateral effort to degrade the standard for partisan advantage could result in the inability of the inferior standard to hold its own in the marketplace. Hence, the strong insistence by SDOs to avoid the holdup or bargaining problems which are, by contrast, routine in collective bargaining between management and labor.⁵⁶

In sum, as the above discussion has demonstrated, the FRAND bargain, in the context of innovation-driven standardization, is a voluntary reciprocal exchange of assurances that is central to the formation and continuing operation of a vibrant marketplace between innovators and implementers that generates enormous positive externalities. That the nature of the exchange is somewhat indefinite and vague is not an invitation for judicial intervention or interpretation, but a central and necessary feature of the framework itself. It is therefore critical to warn against hasty interventions in the rare, marginal cases that have the potential to disrupt the delicate balance of rights and obligations that lead to successful negotiated outcomes in the huge number of routine cases. What is necessary, rather, is an appreciation of the inherent reciprocity of the good-faith foundations of the FRAND exchange, as well as the ability of both sides to respond to violations of the good faith covenant on one side with reciprocal defections on the other side, such that an implementer can predict *1404 that a failure to bargain in good faith on its end will trigger a corresponding request for an injunction by the innovator on the other. As the next Part explains, only the threat of escalating harms from defection can generate the equilibrium outcome in which both sides uphold their good-faith obligations.

III. ENFORCING FRAND: BALANCING STRONG PROPERTY RIGHTS WITH LIABILITY RULES

As the previous discussion demonstrated, a central feature of the FRAND bargain is to provide implementers access to licenses for patents covering standardized innovations (i.e., SEPs) that implementers must necessarily infringe when practicing the relevant standard.⁵⁷ Thus, having voluntarily entered the FRAND contract, a patent holder waives its right to categorically refuse to grant a license, as well as its right to seek an injunction against an implementer without first attempting to engage in good faith negotiations in pursuit of a license on FRAND terms. The question arises, however, whether the injunction remedy should remain available to the innovator under any circumstance, most notably when an implementer refuses to engage in good-faith negotiations on FRAND terms. After all, that quid pro quo is at the heart of the FRAND deal ex ante. Indeed, absent the backstop of the injunction threat, implementers will have powerful incentives to breach their end of the FRAND contract and pursue their own ex post strategy of “patent holdout” or “efficient infringement.” That conduct could lead to suboptimal returns from playing the FRAND game, and thus an eventual breakdown of the FRAND-enabled innovation marketplace.⁵⁸

*1405 Indeed, the fashionable “efficient infringement” term is itself a sign of the weakness of the common position, for it evokes the oft-used contract notion of “efficient breach” by which it is said that each and every promise should be regarded as an option by the promisor to either perform or pay damages.⁵⁹ Under this view, injunctions against doing business with third persons should always be off the table. But the objections to the theory of efficient breach are numerous.⁶⁰ The most obvious is that oftentimes the calculation of damages is sufficiently complex that important items are too difficult to evaluate. This means promisees are thus left systematically undercompensated. In addition, in dealing with complex supply chains, nonperformance of one contract has ripple effects down the supply chain as more and more people are dislocated. In these downstream disputes, it is not clear whether the promisor who has not performed has a defense based on its inability to obtain the necessary inputs for its performance from his promisors. In all supply chain operations, the focus is on making sure that performance levels are high through the entire system. On this view of the world, any deliberate breach of contract, made in order to secure a high price from another customer, is a fatal offense. The use of damages becomes acceptable only as a backstop remedy, chiefly in cases where timely performance is rendered impossible, say because of a seller's accidental destruction of the goods made for sale.

In patent law as in ordinary contract law, the goal is performance, not damages. Efficient infringement, like efficient breach, is a dangerous misnomer. In response to the risks of efficient infringement, the parties develop institutional arrangements to overcome all obstacles to high-levels of performance.

Yet an influential body of literature, led by Mark Lemley and Carl Shapiro, has instead focused primarily on the risk of “patent holdup” by *1406 innovators while paying short shrift to the correlative risk of “patent holdout” by implementers.⁶¹ While their more recent work has passingly acknowledged the possibility that the injunctive threat may prod implementers into good-faith FRAND licensing negotiations,⁶² the principal focus of Lemley and Shapiro's work has been to discourage the availability of injunctions in the context of products that practice multiple patents, such as mobile handsets that practice numerous SEPs.⁶³ Lemley and Shapiro advise courts to deny injunctions “when the product that would be enjoined contains multiple components, of which only one is the subject of the patent in suit”—a factual description that applies to nearly every product in the modern marketplace, including many pharmaceutical products.⁶⁴ That “relatively simple step,” according to Lemley and Shapiro, “will help to rebalance the patent system and ensure that it enhances rather than impedes innovation in component industries.”⁶⁵

Lemley and Shapiro's writings should be read against the backdrop of the Supreme Court's then-recent decision in *eBay, Inc. v. MercExchange, L.L.C.*,⁶⁶ in which the Supreme Court reversed the traditional rule that a patentee is presumptively entitled to some form of injunctive relief for infringement of a valid patent. In its stead, the Court adopted a now familiar four-part test:

According to well-established principles of equity, a plaintiff seeking a permanent injunction must satisfy a four-factor test before a court may grant such relief. A plaintiff must demonstrate: (1) that it has suffered an irreparable injury; (2) that remedies available at law, such as monetary damages, are inadequate to compensate for that injury; (3) that, considering the balance of hardships between the plaintiff and defendant, a remedy in equity *1407 is warranted; and (4) that the public interest would not be disserved by a permanent injunction.⁶⁷

This “well-established” test mentioned in *eBay* bears little relationship to the historical practices that courts, particularly courts of equity, applied in ordinary nuisance cases.⁶⁸ In these situations, the difficulty of calculating present and future damages attributable to ongoing activities persuaded courts that the first line of defense should be the injunction, which could then be, and often was, supplemented by various forms of interim and cleanup damages. The *eBay* decision jettisoned that subtle and flexible mixed remedial approach and instead reverted to a stark and simplistic opposition between “property rules” and “liability rules,” as those terms were used by Calabresi and Melamed in their seminal article on the subject,⁶⁹ which only considered the pure form of both types of remedy. That mistake magnified the errors of both kinds of rules,⁷⁰ as error and implementation costs always increase in exponential fashion as the law moves to either corner. The holdout problem created under an injunction-only regime has far greater disruptive power than it does in a world in which a small payment of damages may relax some particularly onerous terms of the categorical injunction. And the risk of abuse can be reduced still further by attaching various conditions and limitations to injunctive relief that were not the focus of the Calabresi and Melamed article. Conversely, the valuation problems of a damage system are reduced if the injunction is able to reduce the extent and uncertainty of the loss.

The misunderstanding of the remedial permutations used in standard nuisance cases are only magnified when the battleground shifts from ordinary nuisance disputes to patent litigation. Even in the two-party cases, the great defect of the damages-first approach is that it gives the potential infringer every incentive to refuse to negotiate, knowing that the patent holder will have to endure expensive litigation to obtain damages down the road at a time when either the holder, the infringer, or both may be insolvent. The patentee's situation is further compromised because imitation is the most serious form of flattery. Any firm that is normally willing to purchase a license from a patentee may well refuse to do so if noncompliant firms gain a competitive advantage over compliant firms. Therefore, it becomes ***1408** exceedingly dangerous to adopt remedial structures that presuppose that one side, the putative licensee, necessarily acts in good faith regardless of its behavior, while the other side, the putative licensor, does not. The use of the injunction, suitably restrained in cases of bad faith assertion by the patentee, is an essential component of an overall systematic strategy designed to prevent the disintegration of the voluntary market. A tool that is essential in simple two-party patent disputes does not lose its appeal in the context of SEPs.

The flawed remedial structure announced in *eBay* is further aggravated in the interpretation and enforcement of patent remedies in multiparty situations, most notably in connection with SEPs that are licensed under FRAND principles. The transaction costs in this context are even higher than in the ordinary patent context, and the correct allocation of rights and default rules is thus even more critical.⁷¹ “Correct” rules are those that (i) move the parties toward the Pareto-optimal outcome they would otherwise reach through negotiation in the absence of transaction costs, (ii) adopt practices that reduce transaction costs in order to promote negotiated solutions over litigation, and (iii) uphold and enforce the results of parties' preexisting contractual solutions. “Incorrect” rules create the opposite effects, and their distortionary impacts are difficult to bargain around precisely because of high uncertainty and high transaction costs.

In the FRAND context, a mixed remedial system that begins with the presumption of an injunction in cases of refusals to deal and bad faith negotiations by the putative licensee is the correct approach in that it serves each of the above objectives. It is the very threat of the injunction right--and its associated high transaction costs--that brings the parties to the negotiating table and motivates them to draw upon the full scope of their knowledge and creativity in forming contractual and institutional solutions to the perceived holdup problem.⁷² Indeed the FRAND architecture--and all of its attendant benefits and positive externalities--has arisen *because of* the presumption of injunctive relief, not despite it.

Patent pools for standard-essential patents present another important illustration of the merits of an injunction-first remedial approach. These ***1409** pools do not form *before* the standard is selected, largely because at that juncture no one knows the standard, and thus cannot determine which patents read onto the standards and which do not. Indeed, any effort to bargain for inclusion of a predetermined portfolio of patents before the deliberations are concluded makes it much more likely that an inferior standard will be selected. “The actual creation of pools typically occurs late in the standard life cycle.”⁷³

At this juncture, the standard tends to reduce transaction costs in two ways. First, it makes it easier for various firms that hold patents that read onto the standard to negotiate with each other. Oftentimes, a two-stage negotiation works better than a single negotiation with a large number of parties. Thus, if twenty-four persons hold patents that read onto the standard, it could be easier to find solutions if some separate pools, not necessarily of equal size or value, are created. Some patents may be in groups of six, others in groups of four. Indeed, there is nothing about this process that requires that all patents be placed into pools once the standard is set. It could well be that parties that hold especially strong patents will prefer to negotiate separately. When patents are placed into pools, there is always the risk that the agreement among pool members on royalty rates will include, often by error, implicit cross subsidies. But that risk is in turn reduced if all the patents appear at the *ex ante* stage to have roughly equal value, which makes the first level of bargaining more efficient.

The use of these pools thus increases the returns on investment of all patent holders from the *ex ante* perspective.⁷⁴ They also make it easier to allow for cross-licensing among multiple patent owners in ways that reduce the potential of infringement suits that exist when a given portion of the patent terrain is covered by multiple patents. Just as having small plots of real estate in separate hands increases the likelihood of trespass, so too holding patents of small terrain does the same in the IP space. The pooling solutions thus provide benefits not only in dealing with the outside world, but in dealing with other FRAND members, and the negotiations in these cases can then serve as useful benchmarks for the negotiations with external parties.

Even holders of patents that ultimately *do not* read onto standards are left better off *ex ante*, given that the anticipated returns from success are higher with a viable pooling option available after the standard is set. And ***1410** in many cases, firms may

come with portfolios of patents, some of which read onto a particular standard even if others do not. Accordingly, some measure of diversification reduces the size of the downside. Hence, the expectation is that patent pools should increase returns to the members of the pool. The logic runs as follows: once one part of the standard is clarified, non-pool parties know that their negotiation costs will be reduced because they need to deal with fewer parties in a less complex legal environment. The conflicts of interest which typically crop up in labor-management negotiations are thus muted because of the very different bargaining structures, which are, at all stages, calculated to achieve maximum gain.

The formation of these pools also has its impact on the second stage of negotiations, which occurs between holders of patents subject to FRAND obligations and outside parties. The standard in this context is, of course, necessarily vague when it is stated in the abstract, but the high rate at which these negotiations have historically concluded suggests that this vagueness leads to fewer breakdowns than one might expect a priori. One reason is that the formation of pools will *reduce* the number of separate negotiations that take place. Another is that these negotiations all take place in a fishbowl, meaning that an intransigent stand by any one holder of a SEP will place pressure not only on the prospective licensees but also on those FRAND licensors for the same standard who hold the complementary patents whose value will be reduced if any inefficiencies in the final standard lead to its rejection in the marketplace. In addition, it is likely that there is some overlap between the group of innovators and implementers, for some technology players will hold dual roles of licensor and licensee. This close interdependence extends not only to any single pool but also to other similar pools, creating an environment in which repeat players have to weigh the loss of future opportunities against the possible gains of an aggressive stance in the immediate transaction.

All of these soft pressures typically push parties to make deals so that the FRAND patents do not sit idle while the underlying negotiations take place. These pressures tend to speed up the process of coordination. The effort to impose various independent substantive rules on the operation of this process is highly costly because it involves the examination of the rate of patent utilization in alternative states of the world which are both unobservable and difficult to infer from existing practices. Words like “reasonable royalties” and “incremental damages” may roll easily off the page in government reports, such as the 2011 FTC report entitled “*The Evolving IP Marketplace: Aligning Patent Notice and Remedies with *1411 Competition*,”⁷⁵ where it is sometimes stated that sound practice requires, “when it can be determined, [for] the incremental value of the patented invention over the next-best alternative [to] establish[] the maximum amount that a willing licensee would pay in a hypothetical negotiation,” and for “[c]ourts [to] not award reasonable royalty damages higher than this amount.”⁷⁶ But it is never clear which the next best alternative is when there are two or more, or how that reasonable royalty rate should be determined.⁷⁷ Note that the voluntary practice, when goaded by the injunction, does not need any independent body to both define and apply these slippery definitions in complex cases. It is also worth noting that the administrative costs needed to work out either of these rates will necessarily result in the decline in value of all standards going forward; after all, once the law imposes any external standard, the parties will perforce bargain to that background norm, even if it conflicts with prior industry norms and practices, which may of course vary from industry to industry. Calculating marginal benefits and costs is extraordinarily difficult, and often unnecessary given that parties need not know what these are.

The courts neither have the information nor the institutional capacity of replicating, much less improving upon, contractual and institutional arrangements such as FRAND and SEP patent pools, which have arisen *because of the* presumption of injunctive relief⁷⁸ Thus, at least in the SEPs context, it would seem logical for the courts to push the parties toward negotiated and coordinated solutions through a strong recognition of property rights backed by a principled preference for injunctive relief.

That is particularly true given that the theoretical boogeyman of “royalty stacking”—a principal justification for subverting injunctive relief—has been empirically debunked. In industries subject to innovation-driven standardization, such as mobile handsets, the consistent evidence points to a combination of sharp price decreases and massive technological progress, as well as low aggregate patent royalty payments and increasing market penetration.⁷⁹ The notion that implementers in such innovation-driven industries are being suffocated by an insurmountable patent royalty stack has turned out to be nothing more than horror fiction. This reality is perhaps *1412 best demonstrated by the fact that Google has chosen to enter the mobile handset business,⁸⁰ and Nokia has also elected to reenter that business after several years of seeking to monetize its innovations exclusively through FRAND licensing agreements.⁸¹ If the FRAND licensing business were as lucrative as stacking theory predicts, Nokia would have remained a patent licensing company, rather than reentering the product space. And, if royalty stacking were true, an entity as sophisticated (and opportunity-rich) as Google would not have waded into making and selling mobile handsets.⁸²

Yet as the following Part describes, courts in the United States have largely taken the opposite approach by defaulting to liability rules without due regard for property rights, even in the face of evidence of patent holdout by implementers,⁸³ which is facilitated by misinterpreting and thus redefining FRAND as a wholly one-sided agreement that only serves implementers' interests. These efforts have yielded “incorrect” results in that they have not moved the parties toward the Pareto-optimal outcome they would achieve absent transaction costs, upheld the results of their contractual agreements, or incited them toward negotiated solutions. Instead, they have merely encouraged even greater litigation.

IV. THE EROSION OF THE FRAND FRAMEWORK IN RECENT JUDICIAL DECISIONS AND SDO INTELLECTUAL PROPERTY RIGHTS POLICY REVISIONS

As noted in Part II, the FRAND framework is deliberately vague in order to provide critical flexibility for parties to shape its contours to the *1413 particular circumstances of their negotiations. Notwithstanding its virtues, that amorphousness will, from time to time, bring the parties to litigation.⁸⁴ In response, courts have too often ignored the contractual and mutual exchange that underlies the FRAND bargain, as well as the criticality of enforcing the obligation of good faith and fair dealing on *both* sides. In its place they have instead attempted to “clarify” FRAND itself, beginning with the false premise that FRAND was principally created to promote “widespread” standardization and to avoid “patent holdup,” *i.e.*, that FRAND was created for the benefit of implementers alone and should thus be interpreted with a presumptive preference toward those interests.⁸⁵ Working from this incorrect premise, courts have largely ignored the injunctive remedy even in the face of evidence that the implementer refused to negotiate at all, or at least in good faith, and have also concluded that innovators should take no share of the commercial benefits accruing from standardization of their innovations.

As we illustrate in this Part, the choice between the two strategies--a principal preference for liability rules or a mixed approach that begins with the injunction remedy--is not just a zero-sum game. Indeed, in the face of high transaction costs, pure liability rules tend both to encourage “patent holdout” by implementers and to shortchange innovators in ex post allocations of the cooperative surplus created by FRAND negotiations. Taken together, these two forces reduce the rate of return to innovation overall and to FRAND commitments in particular. Innovators are acutely responsive to such incentive changes in this context, and ex post devaluations of their returns from the FRAND game in a given round necessarily have feedback effects on their willingness to participate in subsequent rounds. In practice, they might then refuse to license their innovations to the industry as a whole, preferring to develop them internally or form limited strategic innovation-development partnerships with only a select set of industry participants. And if neither of the former alternatives *1414 is appealing, they might instead reduce their research and development allocations across the board. Moreover, if these same parties function as innovators in different markets, they should get the benefit of the robust protection of FRAND-committed patents advanced by the rule defended in this essay: the willingness to participate in a FRAND regime should not foreclose the issuance of an injunction against parties that seek to avoid the negotiation process, *i.e.*, unwilling licensees.

The decisions of the Federal Circuit in *Apple v. Motorola*⁸⁶ and the Ninth Circuit in *Microsoft v. Motorola*⁸⁷ are illustrative of the prevailing hostility toward injunctions in the FRAND context--even where there is evidence of an unwilling licensee--and the dangers of that bias.

In *Apple v. Motorola*, Motorola had sought an injunction on the grounds that Apple had negotiated in bad faith by refusing Motorola's licensing offers, which Motorola contended were on FRAND terms, and by stalling negotiations.⁸⁸ Judge Richard Posner, sitting by designation on the district court, denied that request on summary judgment.⁸⁹ On appeal, a majority of the Federal Circuit panel applied the four-part balancing test set forth in *eBay*, holding that the combination of Motorola's FRAND commitment and its willingness to license its patent effectively foreclosed a finding of either irreparable harm or that monetary damages alone would be inadequate.⁹⁰ And while the majority opinion, authored by Judge Jimmie Reyna, nominally acknowledged that “an injunction may be justified where an infringer unilaterally refuses a FRAND royalty or unreasonably delays negotiations to the same effect,” it nonetheless concluded that Apple should not be enjoined because “negotiations have been ongoing, and there is no evidence that Apple has been, for example, unilaterally refusing to agree to a deal.”⁹¹

The inconsistency between the court's legal statement and its holding was not lost on Judge Randall Rader, who wrote separately to concur and dissent in part. He concurred that a unilateral refusal to take a FRAND license should trigger an injunction. But he dissented from the majority's affirmance of the denial of Motorola's injunction request. Judge Rader instead found “evidence that Apple may have been a holdout” and criticized the majority's unwillingness to analyze whether Apple's refusal to license

*1415 on Motorola's offered terms was a refusal of a “FRAND royalty.”⁹² He further cited evidence that Apple had refused for years to even discuss a license while nonetheless infringing the patent in suit.⁹³

Judge Sharon Prost, on the other hand, also wrote separately to express the opposite opinion. While she agreed with the majority opinion that Motorola did not qualify for an injunction, she disagreed with both Judge Reyna and Judge Rader “that an alleged infringer's refusal to enter into a licensing agreement justifies entering an injunction against its conduct.”⁹⁴ Instead, she took the view that an implementer's negotiation conduct--no matter how intransigent--should never justify granting an injunction to the holder of the SEP.⁹⁵

These fractured views appear to explain the internal inconsistency between the statement of the law in *Apple* and its holding. Yet whatever the reasons, the ensuing decision appears to stand for the troubling proposition that a proven infringer of FRAND-encumbered patents may avoid an injunction so long as it maintains the semblance of ongoing negotiations, regardless of whether it has refused to accept FRAND licensing terms. Stated otherwise, *Apple* conflates a unilateral refusal to accept a FRAND deal (which is the relevant inquiry) with a unilateral refusal to engage in discussions regarding *any* deal (which is a toothless standard).

By suggesting that an implementer acts in good faith by simply maintaining a negotiation dialogue, without also considering whether the implementer has refused to accept a proper FRAND licensing offer, the *Apple* majority opinion encourages two erroneous outcomes. First, it suggests that innovators should continue to negotiate even after they have offered a license on FRAND terms, thus necessarily eroding their bargaining power and the value of FRAND-encumbered patents. Second, it suggests that an injunction may not be available unless an implementer refuses to engage in any licensing discussions at all, even if it has rejected FRAND terms, magnifying the same effect.

Subsequently, in *Microsoft v. Motorola*, the Ninth Circuit made a similar error. The case arose out of two letters in which Motorola made opening offers to license its standard-essential patents covering certain Wi-Fi and video encoding standards at a rate of 2.25% of the sales price of the end products-- offers that Motorola represented were consistent with its *1416 FRAND obligations.⁹⁶ The letters stated the offers were available for twenty days. Microsoft did not make a counteroffer or engage in any negotiations. Instead, before the end of that twenty-day period, Microsoft sued Motorola, asserting Motorola's initial offer was a breach of its FRAND commitments.⁹⁷ The next day, Motorola responded with a countersuit seeking an injunction from the district court, and also filed for an injunction with the International Trade Commission (“ITC”).⁹⁸ Microsoft, in turn, amended its complaint to assert that Motorola had further breached its FRAND commitments by pursuing injunctions.⁹⁹

The district court set out to determine a FRAND range for the Motorola portfolios in order to determine whether Motorola's opening licensing offer was a breach of its FRAND commitment. In a 207-page opinion, the court concluded that the top end of the FRAND range was approximately 16 cents per unit for the video encoding portfolio and 19 cents per unit for the Wi-Fi portfolio--figures that were notably lower than Motorola's opening offer.¹⁰⁰ Those rates were then presented to a jury, which was asked whether Motorola violated its duty of good faith and fair dealing by seeking an injunction. The jury found against Motorola and awarded Microsoft damages that included the attorneys' fees Microsoft incurred in defending the injunction actions.¹⁰¹

On appeal, the Ninth Circuit reviewed the sufficiency of the evidence underlying that verdict. The appellate court accepted the jury's finding that Motorola had breached its duty of good faith and fair dealing by pursuing injunctions, citing four categories of evidence.¹⁰² Notably, the Ninth Circuit reasoned that because Motorola could have ultimately obtained a FRAND award from the district court, it lacked a legitimate fear of irreparable harm. From there, the appellate court made the leap that, “[i]n the absence of a fear of irreparable harm as a motive for seeking an injunction, the jury could have inferred that the real motivation was to induce Microsoft to agree to a license at a higher-than-[F]RAND rate.”¹⁰³ In conclusion, the Ninth Circuit embraced the theory that a FRAND-encumbered patentee may violate its duty of good faith and fair dealing and breach its FRAND commitment by seeking injunctive relief, at least where it has not first offered a license on *1417 FRAND terms.¹⁰⁴ With respect to damages, the Ninth Circuit held that Microsoft was entitled to the attorneys' fees it incurred in defending against the injunctions because such fees were “consequential contract damages” arising out of Motorola's breach of its FRAND obligations.¹⁰⁵

In a similar vein, in March 2015 the IEEE adopted a set of IPR policy revisions in which it stated that a FRAND commitment to the IEEE “precludes seeking, or seeking to enforce” an injunction except in two narrow circumstances: (1) where “the implementer fails to participate in, or to comply with the outcome of, an adjudication, including an affirming first-level appellate review,” or (2) “[i]n jurisdictions where the failure to request a Prohibitive Order in a pleading waives the right to seek a Prohibitive Order at a later time.”¹⁰⁶ Notably, the IEEE's policy does not even permit patentees to pursue an injunction where an implementer has categorically refused to take a license on FRAND terms or to negotiate in good faith, and is thus even more restrictive than *Apple* and *Microsoft*.

The critical flaw with the combined result of the Ninth Circuit and Federal Circuit decisions (and the IEEE's policy revision) is that it gives implementers a “heads I win, tails you lose” litigation alternative to pursuing good-faith negotiations, with the dual negative effects of categorically lowering the value of FRAND-encumbered patents and discouraging negotiated resolutions. Recall that in *Microsoft*, the dispute arose out of Motorola's opening offer, to which Microsoft only responded by immediately filing a lawsuit—an approach the district court and Ninth Circuit ultimately embraced and rewarded. Motorola's injunction request only came after Microsoft's lawsuit and was not the genesis of the parties' litigation proceedings. Yet the Ninth Circuit held that an innovator's opening offer in a FRAND negotiation is subject to such a stringent duty of good faith that an innovator may not seek injunctive relief even where an implementer refuses to make any good faith counteroffer in the negotiations.

Thus, under *Microsoft*, an implementer of FRAND-encumbered SEPs has numerous motivations and few disincentives to respond to an opening licensing offer with a lawsuit. If the innovator's opening offer is later determined to have been FRAND, the implementer can accept the offer at *1418 that time, several years down the road. While the implementer would be aware of the nominal risk of an injunction under such facts,¹⁰⁷ it would be willing to take that risk since, under *Microsoft* and *Apple*, mere participation in court-ordered mediation sessions and a post-litigation agreement to pay the judicially determined FRAND rate would appear to obviate both “irreparable harm” and bad faith, and thus the ability to obtain an injunction.¹⁰⁸ If, on the other hand, the opening offer is later determined to have been above FRAND, the implementer will pay the lower FRAND rate *and* may also obtain its attorneys' fees if, for instance, the opening offer is deemed to have erred from FRAND beyond the zone of good faith. Either way, by filing suit the implementer will also force the innovator to incur many millions of dollars in litigation costs, the value of which will not be reflected in the court's FRAND determination.¹⁰⁹

Innovators, in turn, must take these realities into account in making their opening offers. Under the specter of *Microsoft*, the correct opening offer is no longer one that positions the parties to conclude a license on FRAND terms, but rather one that is likely to be FRAND from the outset. Perhaps the implementer will make a counteroffer, but under prevailing law that offer will not be tested against the same good faith standard that is applied to innovators. Hence, availing itself of that option is likely to only generate further delay, which could work to the implementer's advantage. If the innovator rejects, the implementer can sue and, at worst, can later accept the innovator's initial offer. Meanwhile, the implementer can argue that any untested counteroffer conclusively demonstrates good faith under *Apple*. *1419 Accordingly, under *Microsoft* and *Apple*, innovators are pressured to begin at FRAND, and only go lower. Even more troubling, this effect will compound itself as innovators pursue further licenses. Once the first implementer has taken a license, the next implementer will point to the “nondiscriminatory” aspect of FRAND to argue that its licensing rate should not be higher but should certainly be lower. The innovator must either acquiesce or, again, enter litigation in which it can essentially do no better and only do worse. The only way out of this downward spiral is, paradoxically, for the innovator to make an initial offer that it feels is safely FRAND (or at least sufficiently close to be in good faith) and then to embrace litigation (and its attended costs and delays) if the implementer does not accept the initial offer. Accordingly, the end result of this sequential game theory is a mutual motivation toward litigation and away from negotiated resolutions, as well an overall devaluation of FRAND-encumbered patents. This in turn undermines the FRAND-enabled innovation marketplace.

These difficulties arise out of a misallocation of rights among the bargaining parties. Under *Microsoft* and *Apple*, implementers face no credible injunction risk from pushing FRAND negotiations into the courts in search of a lower rate and greater leverage. On the other hand, innovators face the risk of a breach of contract and breach of duty of good faith claim merely based on their opening offers alone. This allocation of rights and risks is particularly misguided since innovators have every reason to avoid litigation costs and secure immediate revenues by engaging in licensing negotiations in good faith, whereas implementers inherently gain from delay, with the gains from reducing the ultimate royalty rate often far exceeding the typical costs of litigation. The entire situation would be radically altered by one key change in the rule: the innovator should be allowed to attack the counteroffer by the implementer because it is below the permissible range of a FRAND offer and is thus not in good faith. Only if both sides are at risk is there pressure for mutual good faith negotiations.

The recent case of *Core Wireless v. LG Electronics* illustrates the dangers of a one-sided legal regime. In 2011, Microsoft and Nokia jointly formed Core Wireless to hold approximately 2,000 Nokia patents covering both standard-essential technologies and nonessential implementation technologies.¹¹⁰ The portfolio was then assigned to Conversant Intellectual Property Management, an experienced patent licensing specialist, who assumed responsibility for licensing the portfolio, as well as all associated *1420 patent litigation and patent prosecution legal costs, in exchange for a revenue sharing agreement with Nokia and Microsoft.¹¹¹ Conversant initiated negotiations with LG Electronics, among others. As the district court observed in awarding enhanced infringement damages against LG five years later:

After a long series of meetings between the parties, including seven meetings in Seoul, Korea, LG invited Core Wireless representatives to Korea one last time and indicated that it would be making a monetary offer for a license. Rather than make an offer or engage in serious, good faith negotiations, LG delivered a terse one-page presentation stating that a lawsuit was “preferable” to a license, and that LG would prefer to wait until another major cell phone manufacturer licensed the portfolio, at which point LG intended to be “a follower” in the established royalty scheme.¹¹²

In other words, LG appears to have pursued a path of “patent holdout” and “efficient infringement.” And while Core Wireless ultimately prevailed in litigation, it was forced to expend nearly \$6.8 million in legal fees and expert fees,¹¹³ and incur many years of delay, in order to obtain an award of \$2.736 million.¹¹⁴ Thus, as *Core Wireless* illustrates, the dangers of an initial misallocation of legal rights and obligations in the FRAND context are not merely theoretical or academic, but are real and powerful. Absent a credible injunction threat, LG appears to have faced no compelling reason to bargain in good faith, and instead invited litigation, driven--according to the district court--“not by the merits or strength of its non-infringement and invalidity defenses,” but rather “by its resistance to being the first in the industry to take a license,”¹¹⁵ and its apparent calculation that the potential benefits from the litigation game, from its standpoint, were more than worth the candle.

Correcting the pervasive effects of these misguided incentives requires changing the incentives themselves. Thus, the better approach is to hold, as noted above, that an implementer has a concrete and reciprocal duty to *1421 negotiate a FRAND license in good faith, and that a breach of that duty automatically and necessarily gives rise to an injunction, which an innovator may pursue at the outset of the litigation. To the extent such an approach must be tied to the *eBay* four-factor test, it would be supported under factor three--“that, considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted”--which should be the only relevant consideration under such circumstances.¹¹⁶ Under that approach, an implementer may not respond to an innovator's first offer with a lawsuit, but instead must make a good faith offer in furtherance of a FRAND agreement and must have that offer rejected before it can sue the innovator for breach of the FRAND duties.¹¹⁷ In other words, the implementer has no cause of action for breach of the FRAND commitment until it has made a good faith offer of its own. Moreover, if an implementer rejects a good-faith FRAND offer from an innovator, the implementer is automatically subject to an injunction if the patents at issue are adjudicated to be valid and infringed. The injunction would not apply if the innovator's offer is found to be outside the good-faith range of FRAND, and an injunction would also not be available if the implementer is found to have made a good-faith pre-suit FRAND offer. Finally, an implementer that has made a good-faith offer and either received no counteroffer or a bad-faith counteroffer may sue the innovator. If the claim prevails, the innovator must grant a license in accordance with the implementer's good-faith pre-suit offer and must also pay the implementers reasonable attorneys' fees.

The above approach moves the parties away from the courtroom and toward the negotiating table, where they can craft mutually agreeable solutions to their licensing disputes against the backdrop of balanced legal rights and remedies for bad-faith conduct on either side.

*1422 Indeed, in July 2015, the European Union Court of Justice (“CJEU”) adopted a similar approach in *Huawei v. ZTE*, in which it stated that a FRAND-encumbered patent holder may seek and obtain an injunction if: (1) it first gives the alleged infringer notice of its claims and the basis for its infringement allegations, including identifying the relevant standards provisions to which its patents are alleged to be essential, as well as a specific written offer on FRAND terms that identifies the royalty amount and how it is calculated; and (2) the implementer does not “diligently” respond with a good-faith response, *i.e.*, neither accepts the innovator's offer nor makes a specific FRAND counteroffer.¹¹⁸

Like the approach proposed above, and unlike in *Microsoft*, the CJEU's approach in *Huawei* does not allow an implementer to pursue claims against the innovator for breach of the FRAND agreement unless the implementer has at least provided a good-faith FRAND counteroffer, and thus promotes negotiation and cooperative solutions between implementers and innovators.¹¹⁹

The United Kingdom's High Court of Justice (Patents) further advanced these principles in its recent decision in *Unwired Planet v. Huawei*.¹²⁰ *Unwired Planet* correctly recognized that “eliminating holdup value is not the only consideration to take into account” when seeking to apply FRAND.¹²¹ Rather, “[i]n order to arrive at fair, reasonable and non discriminatory license terms the patentee must not engage in hold up nor must the licensee engage in hold out.”¹²² In order to create the proper incentives for such mutual good-faith conduct by licensors and licensees, *Unwired Planet* put forth the following two significant holdings.

First, *Unwired Planet* made clear that a licensee will not have a meritorious cause of action for anticompetitive conduct against a licensor who has simply sought a royalty rate that is “higher than the true FRAND rate.”¹²³ Rather, “for a royalty to amount to excessive pricing it would have to be *substantially* more than FRAND,” *i.e.*, “a royalty rate can be at least somewhat higher than the true FRAND rate and still not be contrary to competition law.”¹²⁴ Thus, an innovator's licensing offers that are made “as a step in negotiation” should not give rise to a cause of action by the *1423 implementer, even if the offers are ultimately determined to be “a number of times higher” than an adjudicated FRAND rate, so long as the offers were not intended to “prejudice or disrupt the negotiation,” *i.e.*, were made in good faith.¹²⁵ Relatedly, an innovator should not be deprived of the injunctive remedy simply because its pre-suit offers were above the ultimately adjudicated FRAND rate, and does not engage in “premature litigation” by commencing an infringement suit before first making an offer that is later determined to be truly FRAND.¹²⁶

Second, *Unwired Planet* held that an injunction should apply to an implementer found to infringe a valid patent and who “refuses to take a license on terms found by the court to be FRAND.”¹²⁷ In such circumstances, the implementer should “not be entitled to the protection from injunctions provided for by the patentee's FRAND undertaking” and instead would be properly “coerced” into taking a license on FRAND terms.¹²⁸

In stark contrast to the correct incentives and policies advanced by the *Huawei v. ZTE* and *Unwired Planet v. Huawei* decisions, the IEEE's 2015 policy revisions have only sown discord and undermined the FRAND framework's basic purpose of bringing innovators and implementers into an innovation-driven standardization marketplace. For instance, since the IEEE adopted its highly one-sided injunction policy, key innovation contributors including Qualcomm, Nokia, Ericsson, and InterDigital have refused to abide by the policy revision and have also refused to make further FRAND commitments to the IEEE on those terms.¹²⁹

Similarly, the Federal Circuit and IEEE's “clarification” efforts with respect to the damages remedy in the FRAND context, *i.e.*, “reasonable royalties,” have also heavily skewed the playing field in implementers' favor and thus created further distortions and inefficiencies that undermine the FRAND regime.

*1424 As previously noted, a central purpose of the FRAND structure is to ensure that innovators are “adequately and fairly rewarded”¹³⁰ for the use of their technologies and are “motivated to contribute their patented technologies to the standards-development process.”¹³¹ As SDOs like ETSI and ITU have long recognized and witnessed firsthand, patented innovations contribute enormous value to the standardization process and to the success of the standards and the products that implement them. Given innovators' contributions to the success of innovation-driven standardization efforts like Wi-Fi and 4G, a “reasonable royalty” approach intended to “adequately and fairly” compensate innovators and to “motivate” their continued contributions to the standards development process should allocate some portion of the gains from standardization back to innovators.

Yet the courts have repeatedly held otherwise.¹³² Most notably in *Ericsson v. D-Link Systems, Inc.*,¹³³ the Federal Circuit held that the calculation of a reasonable royalty award for SEPs “should reflect the approximate value of [the patent's] technological contribution, not the value of its widespread adoption due to standardization.”¹³⁴ In other words, *Ericsson* held that “any

royalty award must be based on the incremental value of the invention, not the value of the standard as a whole or any increased value the patented feature gains from its inclusion in the standard.”¹³⁵

The Federal Circuit reached that holding through heavy reliance on the Supreme Court's decision in *Garretson v. Clark*,¹³⁶ which the *Ericsson* court concluded “requires apportionment of the value of the patented technology from the value of its standardization.”¹³⁷ The court's reasoning began with the correct legal premise that a “patent holder should only be compensated for the approximate incremental benefit derived from his invention,”¹³⁸ but then veered off course by assuming, without any evidence *1425 or meaningful analysis, that “widespread adoption due to standardization” is not an inherent benefit contributed by standard essential patents, and on that basis concluded that a SEP holder should derive no value from the gains associated with the standardization of its patented technology.¹³⁹

The Federal Circuit subsequently reiterated *Ericsson's* holding in *Commonwealth Scientific and Industrial Research Organisation (“CSIRO”) v. Cisco Systems*,¹⁴⁰ where it perpetuated the misguided notion that innovators are not rightly entitled to share in the “benefit created by standardization--benefit that would otherwise flow to consumers and businesses practicing the standard.”¹⁴¹ Applying *Ericsson*, the court vacated the district court's reasonable-royalty determination, which was based on actual licensing offers and discussions between the parties themselves, and instructed the lower court on remand to both “consider[] the standard's role in causing commercial success” of the adjudicated infringing products and to consider an adjustment, *i.e.*, a decrease, to its royalty determination “for standardization.”¹⁴²

And in March 2015, the IEEE incorporated this aspect of *Ericsson* into its IPR Policy, stating that a “Reasonable Rate” must exclude “the value, if any, resulting from inclusion of that [SEP] in the IEEE Standard.”¹⁴³

The error underlying the above aspects of *Ericsson* and *CSIRO* is, as noted earlier, a failure to distinguish between two very different types of standards-creation processes: those that merely pick one uniform approach from a range of essentially equivalent alternatives, and those that *develop* technological advancements by evaluating and bringing together next-generation innovations for the widest impact and dissemination through standardization. These development standards seek to identify next-generation innovations and to promote the widespread dissemination of those cutting-edge innovations through standardization. The 802.11 Wi-Fi standards, which were at issue in *Ericsson* and *CSIRO*, fall into that latter category, as do the successive generations of cellular telecommunications standards, from 2G through 5G.¹⁴⁴

*1426 The apportionment requirement of *Ericsson* and *CSIRO* makes sense in the former context, *i.e.*, technology-agnostic “standard setting,” which, by definition, derives no particular benefit from selecting one approach over another.

But *Ericsson* and *CSIRO's* apportionment requirement (and the IEEE's adoption of that requirement) is wholly misguided when applied to the latter context of innovation-driven standards development. In this scenario, it would be virtually impossible to achieve meaningful technological advances across generations of standards without the close participation and extensive technological contributions of innovators like Qualcomm, Nokia, and Ericsson. And those innovative contributions are the result of significant risk and investment¹⁴⁵ --exceeding billions of dollars per year¹⁴⁶ --which innovators undertook with the full expectation of “adequate and fair” returns as set forth in their FRAND contractual agreements. Properly understood, the standards-development process is a collaborative joint venture between innovators and implementers in which both parties seek to maximize the commercial success of their respective contributions, including through widespread adoption of the standards and thus the creation of a widespread market for their innovations and products. Having achieved that goal, both parties to the venture should share in the benefits of their mutual standardization efforts.

By requiring apportionment of the value of standardization in *all* cases, *Ericsson* and *CSIRO* appear to conflate innovation-driven standards development (which was relevant to those cases) with technology-agnostic *1427 standards setting (which was not),^{147 148} thereby depriving innovators of rightfully earned returns on their extensive R&D investments and contributions to successful standardization. This, in turn, further depresses the value of standard-essential patents and further rewrites the FRAND bargain to the detriment of innovators and, ultimately, innovation.¹⁴⁹

Garretson--which was decided in 1884 and neither faced nor addressed any of the above standards-related considerations--should not be literally applied to cases like *Ericsson* and *CSIRO*. Rather, consistent with *Garretson* and *Georgia-Pacific Corp.*

v. U.S. Plywood Corp.,¹⁵⁰ SEP infringement damages should reflect the value of the patentee's contribution to the product's commercial success, including through innovation-driven standards development.

Indeed, the vast majority of innovation-driven SDOs appear to disagree with *Ericsson*, *CSIRO*, and the IEEE on this issue, as no major SDO other than the IEEE has incorporated such an apportionment requirement into its IPR policy. Moreover, the IEEE's incorporation of the *Ericsson* *1428 apportionment rule has led to the aforementioned mutiny by numerous members, including Qualcomm, InterDigital, Ericsson, and Nokia, who have refused to make FRAND assurances under the March 2015 policy.¹⁵¹ And an analysis of the IEEE's response to members' opposition to that revision has identified “a statistically significant bias against the firms that opposed the bylaw amendments--primarily large SEP holders--and in favor of revisions designed to devalue SEPs.”¹⁵²

In sum, what is wholly lacking from this one-sided approach is an awareness that opportunism and holdups are a two-way street. A firm that invests heavily in a patent that reads onto a standard may be met by a refusal to deal from a potential FRAND licensee, who claims that the rate is above some supposed competitive rate of return. But beneath the objection lies the simple point that the refusal to accept terms may well deprive that patentee of the rate of return needed to make its investment worthwhile, just as can happen with common carriers and public utilities if faced with confiscatory rates. Therefore, in the abstract, the risks are far from symmetrical. Indeed, the greater the hue and cry about exploitation by the patentee, the more likely it is that the potential licensee can reduce the terms, knowing that injunctions will only be issued in rare cases that are not relevant to routine business transactions. Therefore, at this point, whenever the specter of bilateral opportunism arises, where does the greater peril lie? In many instances, the most likely source of abuse lies with the putative licensee, who already has what it wanted (use of the innovator's valuable technology as part of its products and the standard) and who (absent a court order) can profit from that technology through its product sales without paying anything to the innovator at all. And the prospective licensee's incentives for such opportunism only increase once it has little or no SEPs of its own to license out. The same situation arises when its counterparty is purely an innovator or patent holder, rather than an innovator-implementer. In such circumstances, the putative licensee in this round has little concern for maintaining good will with the putative licensor, as their roles will not be reversed in future rounds, thereby further weakening the elaborate set of soft institutional and social constraints that bind parties who both contribute patents to the SDO standard and practice that standard.

Refreshingly, the UK's High Court of Justice has recently pushed back against the implementer-centric tendencies of American courts and the IEEE. In *Unwired Planet*, the High Court held that FRAND does not compel that “the patentee could not appropriate some of the value that is *1429 associated with the inclusion of his technology into the standard and the value of the products that are using those standards,” and that it is “not necessary to deprive the patentee of its fair share of those two sources of value in order to eliminate hold up and fulfill the purpose of FRAND.”¹⁵³ Indeed, that point was undisputed by both sides in the *Unwired Planet* matter notwithstanding the Federal Circuit's decisions in *Ericsson* and *CSIRO*.¹⁵⁴

V. IMPLEMENTER-CENTRICISM IN ITS LARGER LEGAL AND ECONOMIC CONTEXT

As we have shown, the misguided judicial and policy approaches we discuss in this Article appear driven by a presumptive and pervasive prejudice in favor of implementers and against innovators. The central thrust of that view is to minimize returns to innovation inputs via attractive but false theories like royalty stacking, all in order to augment returns to commercial embodiments and thus ensure (so the theory goes) that the production of commercial embodiments can continue.¹⁵⁵ These same philosophical foundations underlie the *eBay* decision, in which Justice Kennedy's concurrence appeared to sound an alarm by observing that “[a]n industry has developed in which firms use patents not as a basis for producing and selling goods but, instead, primarily for obtaining licensing fees,”¹⁵⁶ and which courts (particularly in America) have subsequently applied in a manner that effectively precludes the injunction remedy to companies that do not produce their own commercial embodiments of their inventions.¹⁵⁷

Although we demonstrate and explore that object-centric bias through a focus on FRAND and the mobile handset marketplace, the sources of that bias run much deeper, and its troubling implications reach far beyond standard-reliant industries.

This bias arises because our commercial society is fundamentally built to value, protect, and reward “things” or “objects” rather than “ideas”--objects that embody innovations, but not necessarily the underlying innovations themselves. The ultimate consequence of our current “objects *1430 over ideas” framework is that it impedes the development and growth of the

“ideas economy” at its seminal moment. The confused logic of Justice Kennedy's position represents a rejection of the basic principle, as old as Adam Smith, that gains from trade derive from socially productive specialization in the marketplace, and that free-market actors will allocate resources where they can secure the highest value. There is thus no reason to lament, as Justice Kennedy did, that patents have increasingly emerged as a distinct asset class. Rather, that is precisely the trend that should be encouraged. As the costs and barriers to manufacturing and implementation continue to plummet--whether through globalization, robotics, 3D printing, advances in computing hardware and software, or otherwise--it is increasingly the ideas themselves, not their implementation, that hold the greatest value. And it is in this realm of ideas and innovation that human beings will continue to hold a productive role for the foreseeable future.

If we are to move into this next phase of our economic existence, ideas must be protectable, transactable, and monetizable. Our legal rules and social norms must recognize and allocate value and primacy to innovation, while also embracing a new economic order in which the development of commercial embodiments becomes a low-margin industry. Most notably, an efficient marketplace for innovation necessarily allows specialization between innovators and implementers, rather than forcing an increasingly inefficient vertical integration between the two. Thus, in Silicon Valley 2.0, brilliant young entrepreneurs should not be distracted by developing and selling their innovations as products, but rather should be able to develop firms that occupy the far more impactful (and lucrative) role of generating and transacting ideas alone.

This Article thus focuses on the treatment of FRAND-encumbered standard-essential patents because that subject is at the forefront of these far broader issues. By and large, FRAND-encumbered SEPs are not vague, abstract, infinitely broad, whimsical, or practically irrelevant. They encompass and protect precise, narrow, and concrete engineering innovations that are the results of billions of dollars in research and development and millions of hours of grinding labor,¹⁵⁸ trial and error, and occasional genius by engineers who know their field of art and continually work to advance it. These mere ideas yield real benefits and real results. It is these ideas that have moved us from 2G to 3G to 4G and now on to 5G, enabling billions and even trillions of dollars in economic gains. It is these *1431 ideas that have led to the magic of Wi-Fi. We have all enjoyed their massive benefits, and it is only logical that our commercial legal regime should enable the protection, transaction, and monetization of such innovations as standalone assets.

The patent system is currently our most sophisticated mechanism for achieving that aim. Thus, the anti-patent, anti-licensing, and anti-innovator trends we identify here represent precisely the wrong approach at exactly the wrong time. Rather than working from the premise that the FRAND marketplace is inherently flawed and that one side of the bargain requires continuous and significant judicial protection against systematic abuse from the other, courts, legislators, regulators, and academics should recognize that it is the very combination of strong property rights for innovation and strong enforcement of voluntary contractual arrangements that has brought us this far--and that this approach is the only one that can take us further.

Footnotes

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¹ An “innovator” company may also be an “implementer,” or may focus purely on developing innovations. As used herein, the relevant characteristic of an “innovator” is its ability, on net, to export innovation to others in the industry.

- 2 As used herein, the term “implementer” refers to a company that is responsible for manufacturing and/or commercializing products for sale to end users. The term does not exclude the possibility that an “implementer” company may also be an “innovator,” either in the same market or in some downstream market.
- 3 Makan Delrahim, Assistant Att’y Gen., U.S. Dep’t of Justice, The “New Madison” Approach to Antitrust and Intellectual Property Law 9 & n.30 (Mar. 16, 2018), www.justice.gov/opa/speech/file/1044316/download. Our Article was communicated to Delrahim in a letter of February 13, 2018, which was signed by several academics, including Epstein. Letter from Jonathan Barnett et al., Professor, USC Gould Sch. of Law, to Makan Delrahim, Assistant Att’y Gen., U.S. Dep’t of Justice (Feb. 13, 2018), <https://cpip.gmu.edu/wp-content/uploads/sites/31/2018/02/Letter-to-DOJ-Supporting-Evidence-Based-Approach-to-Antitrust-Enforcement-of-IP.pdf>
- 4 *See generally, e.g.*, Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991 (2007).
- 5 *See Oracle Am., Inc. v. Google LLC*, Nos. 2017-1118, 2017-1202, 2018 WL 1473875, at *19 (Fed. Cir. Mar. 27, 2018) (“It is undisputed, however, that Google copied 11,500 lines of code--11,330 more lines than necessary to write in Java.”).
- 6 *See* Peter S. Menell, *API Copyrightability Bleak House: Unraveling and Repairing the Oracle v. Google Jurisdictional Mess*, 31 BERKELEY TECH. L.J. 1515, 1542 (2016) (describing how license “negotiations unraveled” because of “Google’s unwillingness to agree to make Android fully compatible with the Java platform”).
- 7 *Oracle Am.*, 2018 WL 1473875, at *19.
- 8 *Id.* at *22.
- 9 *Id.* at *23-24.
- 10 In fact, Professor Peter Menell has made this exact comparison in describing the protracted litigation. *See* Menell, *supra* note 6, at 1517-18.
- 11 *See, e.g.*, *Microsoft Corp. v. Motorola, Inc.*, 854 F. Supp. 2d 993, 999 (W.D. Wash. 2012) (recognizing that FRAND commitments made through standards development organizations are contractual); *Apple, Inc. v. Motorola Mobility, Inc.*, 886 F. Supp. 2d 1061, 1083 (W.D. Wis. 2012) (same); *In re Innovatio IP Ventures, LLC Patent Litig.*, No. 11 C 9308, 2013 WL 5593609, at *4 (N.D. Ill. Oct. 3, 2013) (same).
- 12 For a discussion in connection with the emergence of custom, see Richard A. Epstein, *The Path to the T.J. Hooper: The Theory and History of Custom in the Law of Tort*, 21 J. LEGAL STUD. 1 (1992), dealing with both customary practices and specific contractual arrangements.
- 13 *See generally* Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089 (1972).
- 14 *See id.* at 1109-11.
- 15 *See* Lemley & Shapiro, *supra* note 4.

- 16 See generally Robert P. Merges, *Of Property Rules, Coase, and Intellectual Property*, 94 COLUM. L. REV. 2655 (1994).
- 17 See, e.g., Jonathan M. Barnett, *Has the Academy Led Patent Law Astray?*, 32 BERKELEY TECH. L.J. 1313 (2017); Alexander Galetovic et al., *Is There Evidence of an Anticommons Tragedy in the Smartphone Industry?*, 32 BERKELEY TECH. L.J. 1527(2017) (noting that the “average cumulative royalty yield from ... 21 identified patent licensors. ... is 3.4 percent”); see also J. Gregory Sidak, *Testing for Bias to Suppress Royalties for Standard-Essential Patents*, 1 CRITERION J. ON INNOVATION 301, 301-02 (2016) (describing royalty-limiting steps taking by SSOs like the IEEE).
- 18 IEEE, IEEE-SA STANDARDS BOARD BYLAWS § 6.1 at 16 (2017), http://standards.ieee.org/develop/policies/bylaws/sb_bylaws.pdf.
- 19 757 F.3d 1286 (Fed. Cir. 2014).
- 20 795 F.3d 1024 (9th Cir. 2015).
- 21 See generally Case C-170/13, *Huawei Tech. Co. v. ZTE Corp.*, 2015 E.C.R. 477.
- 22 See generally Jorge L. Contreras, *Unwired Planet v. Huawei: An English Perspective on FRAND Royalties*, PATENTLY-O (Apr. 10, 2017), <https://patentlyo.com/patent/2017/04/unwired-perspective-royalties.html>.
- 23 See *Worldwide Smartphone Shipments Up 1.0% Year over Year in Third Quarter Despite Samsung Galaxy Note 7 Recall*, According to IDC, INT'L DATA CORP. (Oct. 26, 2016), <https://www.idc.com/getdoc.jsp?containerId=prUS41882816> (gathering data from the third quarter of 2016).
- 24 The ETSI IPR Online Database does not list either Oppo or Vivo among the 239 companies that have declared nearly 200,000 patents related to ETSI's more than 8,500 cellular telecommunications standards. *ETSI IPR Online Database*, EUROPEAN TELECOMMS. STANDARDS INST., <https://ipr.etsi.org/SearchIPRD.aspx> (last visited February 13, 2018) (listing companies inside the “Declaring companies” box on the search page, which is visible after clicking “confirm to continue” on the disclaimer).
- 25 See Greg Kumparak, *A Glimpse Inside Tesla's Super Secretive Gigafactory*, TECHCRUNCH (July 29, 2016), <http://techcrunch.com/2016/07/29/a-glimpse-inside-teslas-super-secretive-gigafactory/> (quoting Elon Musk's description of one such factory as “a machine to build the machines”).
- 26 See *Architectures, Processors, and Devices*, ARM at 1-1 to 1-2 (May 19, 2009), http://infocenter.arm.com/help/topic/com.arm.doc.dht0001a/DHT0001A_architecture_processors_and_devices.pdf
- 27 See *id.*; see also Bowman Heiden & Jens Andreasson, *Reevaluating Patent Damages in the Knowledge Economy: The Intellectual Value Chain and the Royalty Base for Standard-Essential Patents*, 1 CRITERION J. ON INNOVATION 229, 266-69 (2016).
- 28 See Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources for Invention*, in THE RATE AND DIRECTION OF INVENTIVE ACTIVITY: ECONOMIC AND SOCIAL FACTORS 609, 615 (1962).
- 29 See Merges, *supra* note 8, at 2661 (recognizing the high transactions costs inherent to intellectual property).

- 30 See EUROPEAN TELECOMMS. STANDARDS INST., ETSI INTELLECTUAL PROPERTY RIGHTS POLICY (VERSION 37) 35-36, 42-43 (2017), https://portal.etsi.org/directives/37_directives_apr_2017.pdf (discussing “[d]isclosure of IPRs” and “availability of [I]licenses”) [hereinafter *ETSI Intellectual Property Rights Policy*].
- 31 *Id.* at 37-38 (discussing “[n]on-availability of [I]licenses”).
- 32 See the ETSI's policy objectives, which state:
- It is ETSI's objective to create STANDARDS and TECHNICAL SPECIFICATIONS that are based on solutions which best meet the technical objectives of the European telecommunications sector, as defined by the General Assembly. In order to further this objective the ETSI IPR POLICY seeks to reduce the risk to ETSI, MEMBERS, and others applying ETSI STANDARDS and TECHNICAL SPECIFICATIONS, that investment in the preparation, adoption and application of STANDARDS could be wasted as a result of an ESSENTIAL IPR for a STANDARD or TECHNICAL SPECIFICATION being unavailable. In achieving this objective, the ETSI IPR POLICY seeks a balance between the needs of standardization for public use in the field of telecommunications and the rights of the owners of IPRs. IPR holders whether members of ETSI and their AFFILIATES or third parties, should be adequately and fairly rewarded for the use of their IPRs in the implementation of STANDARDS and TECHNICAL SPECIFICATIONS.
- Id.* at 35.
- 33 Merges, *supra* note 8, at 2655.
- 34 See *id.* (“[I]n the presence of high transaction costs, industry participants have an incentive to invest in institutions that lower the costs of IPR exchange.”); see also Robert P. Merges, *Contracting into Liability Rules: Intellectual Property Rights and Collective Rights Organizations*, 84 CALIF. L. REV. 1293, 1346 (1996) (“Without ... property rights--backed by the threat of production-choking injunctions--the advantages conveyed by the [patent] pool would never have been realized.”).
- 35 COMM'N OF THE EUROPEAN COMMUNITIES, COMMUNICATION FROM THE COMMISSION: INTELLECTUAL PROPERTY RIGHTS AND STANDARDIZATION 1 (1992), <http://aei.pitt.edu/1222/1/1222.pdf>.
- 36 See Roger G. Brooks & Damien Geradin, *Interpreting and Enforcing the Voluntary FRAND Commitment*, 9 INT'L J. IT STANDARDS & STANDARDIZATION RES. 1, 17 (2011).
- 37 *Id.*
- 38 *Id.* at 21.
- 39 ETSI Intellectual Property Rights Policy, *supra* note 20, at 37.
- 40 *Balancing Innovation and Intellectual Property Rights in a Standards-Setting Context*, INT'L TELECOMM. UNION (2012), <https://itunews.itu.int/en/3049-Balancing-innovation-and-intellectual-property-rights-in-a-standards-setting-context.note.aspx>.
- 41 See Brooks & Geradin, *supra* note 26, at 18-21 (chronicling ETSI's decisions in 1994 and 2006 to reject “restrictions or interpretations identical or analogous to many of those advocated today by the proponents of the restrictive FRAND regimes,” including automatic licensing, requiring a declaration of maximum royalty rates, and mandatory arbitration).

- 42 For a general account of the problem, see *Duquesne Light Co. v. Barasch*, 488 U.S. 299 (1989). The origins of the doctrine were set out by Sir Matthew Hale in his treatise *De Portis Maribus*, which noted that it was proper to impose price limitations on businesses “affected with the public interest, or monopolies.” See Richard A. Epstein, *The Reflections and Responses of a Legal Contrarian*, 44 TULSA L. REV. 647, 669 n.61 (2008). That rule was incorporated into English law in *Allnut v. Inglis* in 1810. 104 Eng. Rep. 206 (K.B. 1810). Finally, in 1876, it worked its way into American law in *Munn v. Illinois*, 94 U.S. 113 (1876). The term “virtual monopoly,” used in *Munn* to capture the difficulty of the subject, derives from *Allnut*. See Epstein, *supra* note 42, at 669 n.61.
- 43 See generally Richard A. Epstein, *The History of Public Utility Regulation in the United States Supreme Court: Of Reasonable and Nondiscriminatory Rates*, 38 J. SUP. CT. HIST. 345 (2013).
- 44 See, e.g., *Norfolk & W. Ry. Co. v. Conley*, 236 U.S. 605 (1915).
- 45 See, e.g., *Brooks-Scanlon Co. v. R.R. Comm'n of La.*, 251 U.S. 396 (1920).
- 46 See, e.g., *Bd. of Pub. Util. Comm'rs v. N.Y. Tel. Co.*, 271 U.S. 23 (1926). However, this principle was disregarded in *AT&T Corp. v. Iowa Utils. Bd.*, 525 U.S. 366 (1999).
- 47 29 U.S.C. §§ 151-69 (2012).
- 48 For the origins of this rule regarding intra-union tensions in the context of race relations, see *Steele v. Louisville & Nashville R.R.*, 323 U.S. 192 (1944). For a more general overview of a union's duties to individual members, see *Vaca v. Sipes*, 386 U.S. 171 (1967).
- 49 See *Merritt v. Reserve Ins. Co.*, 110 Cal. Rptr. 511 (Cal. App. 1973).
- 50 29 U.S.C. § 158(d) (2012).
- 51 See *H.K. Porter Co. v. NLRB*, 397 U.S. 99 (1970).
- 52 See *NLRB v. Truitt Mfg.*, 351 U.S. 149 (1956).
- 53 The matter is now coming to a head before the United States Supreme Court in *Janus v. American Federation of State, County, and Municipal Employees, Council 32*, which remains pending at the time of this writing. See Amy Howe, *Argument Preview: For the Third Time, Justices Take on Union-Fee Issue*, SCOTUSBLOG (Feb. 20, 2018, 10:30 AM), <http://www.scotusblog.com/2018/02/argument-preview-third-time-justices-take-union-fee-issue/>.
- 54 The key case is *Kern v. City of Long Beach*, 179 P.2d 799 (Cal. 1947). For an exhaustive discussion, see Amy Monahan, *Statutes as Contracts? The “California Rule” and Its Impact on Public Pension Reform*, 97 IOWA L. REV. 1029 (2012).
- 55 See, e.g., Richard A. Epstein et al., *The FTC, IP and SSOs: Government Hold-Up Replacement Private Coordination*, 8 J. COMPETITION L. & ECON. 1, 8-15 (2012).
- 56 *Request for Comments and Announcement of Workshop on Standard Setting Issues*, 76 FR 28036 (May 13, 2011) (the “Request”) - Patent Standards Workshop, Project No. P11-1204, ALL. FOR TELECOMM. INDUS. SOLUTIONS 1 (June 14, 2011), (“ATIS has not experienced the hold up problem”), www.ftc.gov/sites/default/files/documents/public_comments/request-comments-and-announcement-

workshop-standard-setting-issues-project-no.p111204-00015%C2%A0/00015-60529.pdf; *Re: Federal Trade Commission Request for Comments and Announcement of Workshop on Standards-Setting Issues (Patent Standards Workshop, Project No. P11-1204)*, INT'L COMM. FOR INFO. TECH. STANDARDS 1 (June 20, 2011), <https://goo.gl/43MuNC> (“The current officers and staff have not been notified of any active patent ‘hold-up’ problems with regards to INCITS standards.”); *Re: Federal Trade Commission Request for Comments and Announcement of Workshop on Standard-Setting Issues (Patent Standards Workshop, Project No. P11-1204)*, TELECOMMS. INDUS. ASSOC. 4 (June 14, 2011), <https://goo.gl/YcNo6V> (“TIA has never received any complaints regarding such ‘patent hold-up’ and does not agree that ‘patent hold-up’ is plaguing the information and telecommunications technology (ICT) standard development processes.”).

57 *See, e.g.*, the ETSI's policy objectives, which state:

In order to further this objective the ETSI IPR POLICY seeks to reduce the risk to ETSI, MEMBERS, and others applying ETSI STANDARDS and TECHNICAL SPECIFICATIONS, that investment in the preparation, adoption and application of STANDARDS could be wasted as a result of an ESSENTIAL IPR for a STANDARD or TECHNICAL SPECIFICATION being unavailable.

ETSI Intellectual Property Rights Policy, *supra* note 20, at 35.

58 *See, e.g.*, Anne Layne-Farrar, *Business Models and the Standard Setting Process*, in *THE PROS AND CONS OF STANDARD SETTING* 34, 49 (2010). Layne-Farrar states:

[O]nce upstream patent holders have no option of seeking injunctive relief, they will have no bargaining power at all in licensing negotiations. Especially within standard setting contexts, where the parties typically commit to license via a FRAND promise, such a rule would amount to compulsory licensing, leaving up-stream patent holders at the mercy of licensees.

59 An early version of this thesis is found in Oliver Wendell Holmes, Jr.'s *The Common Law*, which stated: “[T]he 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.” OLIVER WENDELL HOLMES, JR., *THE COMMON LAW* 301 (1881). Holmes was aware that in some cases the other remedies are allowable but regarded those only as exceptional. *Id.* at 300-01. For a later version see, for example, 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 *COLUM. L. REV.* 554 (1977). For critiques, see Daniel Friedmann, *The Efficient Breach Fallacy*, 18 *J. LEGAL STUD.* 1. (1989), and Richard Craswell, *Contract Remedies, Renegotiation, and the Theory of Efficient Breach*, 61 *S. CAL. L. REV.* 629 (1988).

60 For discussion, see generally Richard A. Epstein & David Kappos, *Legal Remedies for Patent Infringement: From General Principles to FRAND Obligations for Standard Essential Patents*, 9 *COMPETITION POLICY INT'L* 69 (2013).

61 *See, e.g.*, Colleen V. Chien & Mark A. Lemley, *Patent Holdup, the ITC, and the Public Interest*, 98 *CORNELL L. REV.* 1, 41 (2012) (conflating the risk of patent holdout with explicit “copying” and observing that copying “isn't much of a problem”); Mark A. Lemley & Carl Shapiro, *A Simple Approach To Setting Reasonable Royalties for Standard-Essential Patents*, 28 *BERKELEY TECH. L.J.* 1135, 1144 n.23 (2013) (observing that courts may rightly find it inappropriate to grant injunctions even against unwilling FRAND licensees); Lemley & Shapiro, *supra* note 4, at 1991-92; Carl Shapiro, *Injunctions, Hold-Up, and Patent Royalties*, 12 *AM. L. & ECON. REV.* 280, 280-82 (2010).

62 Lemley & Shapiro, *supra* note 49, at 1144 n.23, 1153 (acknowledging that the injunction remedy should be available to innovators faced with an implementer who refuses to negotiate a FRAND license in good faith).

63 Lemley & Shapiro, *supra* note 4, at 2036.

- 64 *Id.*
- 65 *Id.* at 2045.
- 66 547 U.S. 388 (2006).
- 67 *Id.* at 391.
- 68 See generally Mark P. Gergen et al., *The Supreme Court's Accidental Revolution? The Test for Permanent Injunctions*, 112 COLUM. L. REV. 203 (2012) (reviewing traditional equitable remedies, which shows the dominance of injunctive relief, contrary to eBay's four-part test).
- 69 Calabresi & Melamed, *supra* note 5.
- 70 For discussion, see Richard A. Epstein, *Intellectual Property and the Law of Contract: The Case Against “Efficient Breach”*, 9 EUR. REV. CONT. L. 345 (2013).
- 71 R.H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960). For the enduring viability of this notion, see also Pierre Schlag, *The Problem of Transaction Costs*, 62 S. CAL. L. REV. 1661, 1663 n.9 (1989) (citing RICHARD POSNER, ECONOMIC ANALYSIS OF LAW 38, 46-47, 68-69, 81, 82-83, 90, 93-94, 104, 113-14, 122-23 (3d ed. 1986)); Merges, *supra* note 8, at 2655-62.
- 72 See Merges, *supra* note 8, at 2655 (“[I]n the presence of high transaction costs, industry participants have an incentive to invest in institutions that lower the costs of IPR exchange.”).
- 73 Justus Baron & Tim Pohlmann, *The Effect of Patent Pools on Patenting and Innovation--Evidence from Contemporary Patent Standards* 12 (Feb. 2, 2015) (unpublished manuscript), http://www.law.northwestern.edu/research-faculty/searlecenter/innovations/economics/documents/Baron_Pohlmann_effect_of_patents.pdf
- 74 *Id.*
- 75 FED. TRADE COMM'N, THE EVOLVING IP MARKETPLACE: ALIGNING PATENT NOTICE AND REMEDIES WITH COMPETITION 147 (2011).
- 76 *Id.* at 189.
- 77 For a longer critique of the 2011 report, see Epstein et al., *supra* note 43.
- 78 See Merges, *supra* note 24, at 1346 (“Without property rights--backed by the threat of production-choking injunctions--the advantages conveyed by the [patent] pool[s] would never have been realized.”).
- 79 See *supra* note 17.

- 80 Tim Higgins & Nathan Olivarez-Giles, *Google Announces New Pixel Smartphones, Amazon Echo Rival*, WALL ST. J. (Oct. 5, 2016, 9:23 AM), www.wsj.com/articles/google-to-detail-amazon-echo-fighter-called-home-new-phones-1475592365.
- 81 Rory Cellan-Jones, *Nokia Dials Back Time to Sell Mobile Phones Again*, BBC (Dec. 1, 2016), <http://www.bbc.com/news/technology-38167451>.
- 82 Of course, Google may see profit opportunities in the handset space that go beyond per unit profits from device sales. But it is ultimately irrelevant how Google expects to capture value from entering the mobile handset market. The point is simply that Google's decision to enter the market necessarily reveals that Google sees a significant opportunity for large supra-competitive profits. That fact directly contradicts the gloomy prediction of royalty-stacking theory that aggregate patent royalties will cause firms to “not find it worth incurring the costs necessary to develop, manufacture, and sell” products like mobile handsets. *See* Lemley, *supra* note 7, at 2012.
- 83 *See* Merges, *supra* note 8, at 2662 (observing that a strong property rights rule for patents facilitates contractual solutions to patents' high transaction costs, whereas liability rules “work against the flexible, voluntary institutions that are formed to overcome the costs faced by transactors”).
- 84 *See, e.g.,* *Microsoft v. Motorola*, 2013 WL 2111217, at *10 (W.D. Wash. April 25, 2013); *In re Innovatio IP Ventures, LLC Patent Litig.*, No. 11 C 9308, 2013 WL 5593609, at *5 (N.D. Ill. Oct. 3, 2013); *Apple v. Motorola*, 757 F.3d 1286, 1332 (Fed. Cir. 2014); *Ericsson, Inc. v. D-Link Sys., Inc.*, 773 F.3d 1201, 1233 (Fed. Cir. 2014); *Commonwealth Sci. & Indus. Research Org. (“CSIRO”) v. Cisco Sys.*, 809 F.3d 1295, 1304-05 (Fed. Cir. 2015); *Microsoft v. Motorola*, 795 F.3d 1024, 1052 (9th Cir. 2015).
- 85 *See, e.g.,* *Microsoft*, 2013 WL 2111217, at *10 (“The purpose of the RAND commitment is to encourage widespread adoption of the standard.”); *id.* at *20 (“In trying to reach an agreement, the SEP owner would have been obligated to license its SEPs on RAND terms which necessarily must abide by the purpose of the RAND commitment of widespread adoption of the standard through avoidance of holdup and stacking.”).
- 86 757 F.3d 1286 (Fed. Cir. 2014).
- 87 795 F.3d 1024 (9th Cir. 2015).
- 88 *Apple*, 757 F.3d at 1332.
- 89 *Id.* at 1331.
- 90 *Id.* at 1332.
- 91 *Id.*
- 92 *Id.* at 1332-34 (Rader, J., dissenting in part).
- 93 *Id.* at 1333-34 (Rader, J., dissenting in part).

- 94 *Id.* at 1342-43 (Prost, J., dissenting in part).
- 95 *Id.*
- 96 *Microsoft v. Motorola*, 795 F.3d 1024, 1032 (9th Cir. 2015).
- 97 *Id.*
- 98 *Id.*
- 99 *Id.*
- 100 *Id.* at 1033.
- 101 *Id.* at 1034.
- 102 *Id.* at 1047.
- 103 *Id.* at 1046.
- 104 *Id.* at 1048-49, n. 19 (citing *Realtek Semiconductor Corp. v. LSI Corp.*, 946 F. Supp. 2d 998, 1006 (N.D. Cal. 2013), for the proposition that seeking injunctive relief “before offering a license on [F]RAND terms” is inherently inconsistent with the FRAND commitment) (emphasis added).
- 105 *Microsoft v. Motorola*, 795 F.3d 1024, 1049 (9th Cir. 2015).
- 106 IEEE, *supra* note 10, § 6.2 at 16-18.
- 107 See *Microsoft*, 795 F.3d at 1048, n. 19 (agreeing with the Federal Circuit in *Apple* that “if an infringer refused to accept an offer on [F]RAND terms, seeking injunctive relief could be consistent with the [F]RAND agreement, even where the commitment limits recourse to litigation”).
- 108 See *id.* at 1046 (holding that Microsoft's payment of a judicially determined FRAND rate would have “fully compensated for Microsoft's infringing use” and that the potential availability of such an award precluded the possibility of irreparable harm). *Apple v. Motorola* also states:
- Motorola's FRAND commitments ... strongly suggest that money damages are adequate to compensate Motorola for any infringement. Similarly, Motorola has not demonstrated that Apple's infringement caused it irreparable harm Motorola argues that Apple has refused to accept its initial licensing offer and stalled negotiations. However, the record reflects that negotiations are ongoing, and there is no evidence Apple has been, for example, unilaterally refusing to agree to a deal.
- 757 F.3d 1286, 1332 (Fed. Cir. 2014).

- 109 *See Apple*, 757 F.3d at 1342 (Rader, J., dissenting in part) (“In the absence of the threat of an injunction, an infringer would have no incentive to negotiate a license because the worst-case scenario from a patent infringement lawsuit is that it would have to pay the same amount it would have paid earlier for a license.”).
- 110 *See Ben Dummett, Nokia Sells 2,000 Patents*, WALL ST. J. (Sept. 2, 2011).
- 111 *Id.*
- 112 *See Core Wireless Licensing S.a.r.l. v. LG Elecs., Inc.*, No. 2:14-CV-912-JRG, 2016 WL 10749825, at *1 (E.D. Tex. Nov. 2, 2016).
- 113 *See Core Wireless's Motion for Attorneys' Fees and Expert Witness Fees at *1 n.1, Core Wireless Licensing S.a.r.l. v. LG Elecs., Inc.*, No. 2:14-CV-912-JRG (E.D. Tex. Nov. 30, 2016), 2016 WL 10749825.
- 114 *See Core Wireless*, 2016 WL 10749825, at *2. Core Wireless also moved for an award of attorneys' fees and expert fees. These motions are pending as of this writing.
- 115 *See id.*
- 116 *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 391 (2006).
- 117 Judge Leonard Davis made similar observations in *Ericsson v. D-Link Systems*, where he noted:

RAND licensing also includes an obligation to negotiate in good faith. This obligation is a two-way street. As potential licensees in a RAND negotiation, Defendants possessed an obligation to negotiate in good faith and earnestly seek an amicable royalty rate. They failed to do so. Defendants' entire argument boils down to the fact that they believed Ericsson's initial RAND offer was too high. However, Ericsson's \$0.50 offer was only the starting point in the negotiations. Defendants never meaningfully engaged Ericsson in RAND licensing negotiations after the initial offer. Further, the fact that the RAND rate was ultimately litigated in court does not make Ericsson's initial offer unreasonable.

Ericsson Inc. v. D-Link Sys., Inc., No. 6:10-CV-473, 2013 WL 4046225, at *25 (E.D. Tex. Aug. 6, 2013), *aff'd in part, vacated in part, rev'd in part*, 773 F.3d 1201 (Fed. Cir. 2014).
- 118 Case C-170/13, *Huawei Tech. Co. v. ZTE Corp.*, 2015 E.C.R. 477, 60-71.
- 119 *See also Ericsson*, 2013 WL 4046225, at *16 (“Intel cannot rely on its failure to negotiate to prove Ericsson's failure to make a legitimate license offer.”).
- 120 *Unwired Planet v. Huawei* [2017] EWHC (Pat) 711 (U.K.).
- 121 *Id.* ¶ 95.
- 122 *Id.* ¶ 96.
- 123 *Id.* ¶ 153.

- 124 *Id.* (emphasis added).
- 125 *Id.* ¶¶ 783-84.
- 126 *Id.* ¶ 755.
- 127 *Id.* ¶ 806(5).
- 128 *Id.* ¶ 167.
- 129 *See, e.g.*, Richard Lloyd, *The IEEE's New Patent Policy One Year on--the Battle That's Part of a Bigger Licensing War*, IAM (May 6, 2016), <http://www.iam-media.com/blog/detail.aspx?g=e8f72d6e-a3f8-45d8-882f-3ebdd3a1d69e>; Susan Decker & Ian King, *Qualcomm Says It Won't Follow New Wi-Fi Rules on Patents*, BLOOMBERG TECH. (Feb. 11, 2015, 2:29 PM), <https://www.bloomberg.com/news/articles/2015-02-11/qualcomm-says-new-wi-fi-standard-rules-unfair-may-not-take-part>.
- 130 ETSI Intellectual Property Rights Policy, *supra* note 20, at 35.
- 131 INT'L TELECOMM. UNION, *supra* note 30.
- 132 By missing the basic point of FRAND, courts demonstrate a continuing lack of understanding and appreciation for organizational innovations. *See* OLIVER E. WILLIAMSON, *MARKETS AND HIERARCHIES: ANALYSIS AND ANTITRUST IMPLICATIONS* 192-93 (1975).
- 133 773 F.3d 1201 (Fed. Cir. 2014).
- 134 *Id.* at 1233.
- 135 *Id.* at 1235.
- 136 111 U.S. 120 (1884).
- 137 *Ericsson, Inc. v. D-Link Sys., Inc.*, 773 F.3d 1201, 1233 (Fed. Cir. 2014) (emphasis added).
- 138 *Id.* (citing *Garretson v. Clark*, 111 U.S. 120, 121 (1884)).
- 139 *Ericsson*, 773 F.3d at 1233.
- 140 809 F.3d 1295 (Fed. Cir. 2015).
- 141 *Id.* at 1305.
- 142 *Id.* at 1305-06.

- 143 IEEE, *supra* note 10, § 6.1 at 16.
- 144 For an example, *see* the ETSI's explanation of “What We Do,” which states:
 We facilitate the early exchange of information between the research and standardization communities. Researchers benefit from early exposure to the issues they face in industrial take-up of their ideas. Industry benefits from faster exploitation of research results. Research input is very relevant in early study phases, when alternative technical solutions have to be evaluated.
 ETSI, *What We Do: From Research to Standards*, <http://www.etsi.org/about/what-we-do/research> [<https://perma.cc/4QH7-LWAL>]
- 145 David J. Teece, *The “Tragedy of the Anticommons” Fallacy: A Law and Economics Analysis of Patent Thickets and FRAND Licensing*, 32 BERKELEY TECH. L.J. 1489 (2017).
- 146 *See, e.g.*, Brief of Amicus Curiae Qualcomm Incorporated In Support of Neither Party at *2, [Microsoft v. Motorola](#), 795 F.3d 1024 (9th Cir. 2015) (No. 14-35393), 2014 WL 4802385 (noting that Qualcomm invests \$5 billion per year in research and development, amounting to 20% of its annual revenues).
- 147 *See Ericsson v. D-Link Systems, Inc.*, 773 F.3d 1201, 1233 (Fed. Cir. 2014).
 When a technology is incorporated into a standard, it is typically chosen from among different options. Once incorporated and widely adopted, that technology is not always used because it is the best or the only option; it is used because its use is necessary to comply with the standard. In other words, widespread adoption of standard essential technology is not entirely indicative of the added usefulness of an innovation over the prior art.
Id.; *see also* Commonwealth Sci. & Indus. Res. Org. v. [Cisco Sys.](#), 809 F.3d 1295, 1305 (Fed. Cir. 2015) (“[T]he value of the technology ... is distinct from any value that artificially accrues to the patent due to the standard's adoption. Without this rule, patentees would receive all of the benefit created by standardization--benefit that would otherwise flow to consumers and businesses practicing the standard.”).
- 148 *See supra* Part II (distinguishing between technology-agnostic standard setting such as picking a side of the road to drive on and innovation-driven standards development).
- 149 *See* J. Gregory Sidak, *Apportionment, FRAND Royalties, and Comparable Licenses After Ericsson v. D-Link*, 2016 U. ILL. L. REV. 1809, 1867 (2016). Professor Sidak explains:
 No economic or normative justification supports the assumption that all of the seller surplus from the standard should accrue to the implementers. Without the SEP holder's contribution to the value of the standard, the implementer's profit from the sale of the end product that practices the standard would not exist. There is no economically sound reason to deny an SEP holder any portion of the value of the standard that it helped to create.
Id.; *see also id.* at 1862-67.
- 150 318 F. Supp. 1116 (S.D.N.Y. 1970) (developing an influential set of factors that courts consider when calculating reasonable royalties).
- 151 *See supra* note 94 and accompanying text.
- 152 *See* Sidak, *supra* note 9, at 333.

- 153 Unwired Planet v. Huawei [2017] EWHC (Pat) 711 [¶ 97] (U.K.).
- 154 *Id.*
- 155 See Barnett, *supra* note 9; Alexander Galetovic, Stephen Haber & Lew Zaretzki, *Is There an Anticommons Tragedy in the World Smartphone Industry?*, 32 BERKELEY TECH. L.J. 1527 (2017).
- 156 eBay Inc. v. MercExchange, L.L.C., 547 U.S. 388, 396 (2006) (Kennedy, J. concurring).
- 157 See Barnett, *supra* note 9.
- 158 See Alexander Galetovic & Kirti Gupta, *Royalty Stacking and Standard Essential Patents: Theory and Evidence from the World Mobile Wireless Industry* 19-20 (Hoover Inst. Working Grp. on Intellectual Prop., Innovation, & Prosperity, Working Paper No. 15012, 2016), <https://hooverip2.org/wp-content/uploads/ip2-wp15012-paper.pdf>.

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