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THE CASE FOR CONTRIBUTION IN PATENT LAW

*Bernard Chao**

Under tort law's theory of contribution, when one party is sued, it can implead other parties that may be jointly and severally liable and ask that they pay their fair share of any judgment. Although contribution theory has spread to numerous wide-ranging areas of the law, patent law is not among them. Thus, when a manufacturer is sued for patent infringement, it cannot seek contribution from the component supplier that included the patented technology in its component. This omission from patent law has generated surprisingly little commentary. In the few instances where an accused infringer has sought a right of contribution, the district courts have concluded that contribution is somehow preempted by 35 U.S.C. 271(c), which governs contributory infringement. This article explains how these decisions have incorrectly conflated the two doctrines. Contribution determines how to apportion damages between different liable parties while contributory infringement helps identify which parties are liable. Once the courts appreciate this distinction, they can and should adopt contribution in patent law.

Contribution is typically thought of as a mechanism that equitably spreads liability among different responsible parties. However, because of the availability of indemnification agreements, contribution performs a more limited version of that role in patent law. However, this article identifies a much less expected benefit unique to patent law. Contribution should lower royalty awards in component patent cases, an area where awards have been shown to be excessive. Relying on the behavioral economics concepts of "anchoring" and "coherence," this article compares how juries act under the current system with how they would behave under a patent system applying contribution theory. The article suggests that applying contribution will lead to lower royalty awards that are based on the value of the individual components and not the larger multi-component products.

* Bernard Chao is an assistant professor at the University of Denver, Sturm College of Law. Thanks to Viva Moffat, Fred Hadidi, Alan Chen, Paul Ohm, Harry Surden, Rebecca Aviel, Brian Love, and Mark Lemley for their comments on an earlier draft. I would also like to thank both the participants of the Samsung-Stanford Conference on Patent Remedies and my colleagues at the University of Denver who attended my work in progress presentation. Both groups provided many valuable insights. Finally, thanks to the sponsors of the Samsung–Stanford Patent Prize for their generosity.

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I. INTRODUCTION

Under tort law's theory of contribution, when one party is sued, it can implead other parties that may be jointly and severally liable and ask that they pay their fair share of any judgment. Although contribution theory has spread to numerous areas of the law, patent law is not among them. Thus, when a manufacturer is sued for patent infringement, it cannot seek contribution from the component supplier that included the patented technology in its component. This omission from patent law has generated surprisingly little commentary.[1]

1. *See* David Hricik, *Remedies of the Infringer: The Use by the Infringer of Implied and Common Law Federal Rights, State Law Claims, and Contract to Shift Liability for Infringement of Patents, Copyrights, and Trademarks*, 28 TEX. TECH L. REV. 1027, 1056 (1997) (stating that only the patent statutes do not imply a right to contribution); *see also* Roger D. Blair & Thomas F. Cotter, *An Economic Analysis of Seller and User Liability in Intellectual Property Law*, 68 U. CIN. L. REV. 1, 21,

This article fills this void and presents the multifaceted case for contribution in patent law. From a doctrinal perspective, district courts have incorrectly found that contribution is preempted by the statute governing contributory infringement, 35 U.S.C. § 271(c). They arrive at this decision by wrongly conflating tort law's theory of contribution and patent law's theory of contributory infringement. By itself, correcting this mistake does not provide the legal basis for adopting contribution. The Supreme Court has said that the courts have the power to adopt contribution in a particular area of federal substantive law only when certain criteria are met. Fortunately, patent law fits squarely into one of the specified tests. Courts (not Congress) have determined that patent infringers are jointly and severally liable. Consequently, under established Supreme Court precedent, courts have the authority to determine whether the ancillary theory of contribution should also be adopted.

The case for contribution does not rely on doctrinal justifications alone. Compelling policy reasons for the courts to adopt contribution in patent law also exist. Although contribution is typically thought of as a mechanism that equitably spreads liability among different responsible parties, that will not be its primary benefit in patent law. Since companies that are responsible for the same infringement typically have a relationship with each other, they are able to negotiate indemnification agreements. In most cases, indemnification agreements can adequately spread risk. However, in some situations, parties either do not or cannot fairly negotiate an indemnification provision. In those cases, contribution provides an equitable default set of rules to allocate liability.

But contribution provides a much more compelling and unexpected policy benefit unique to patent law. It should lower royalty awards in component patent cases, an area where awards have been shown to be excessive. Overcompensation can be explained, at least in part, by behavioral economics and "anchors" that cause juries to calculate royalty awards based on the value of the larger multi-component products (e.g., an LCD TV) rather than the individual components (e.g.,

n.81 (1999) ("Whether patent law itself imposes any duty of contribution among joint tortfeasors is also uncertain, although the few cases that have addressed this issue have held that it does not.").

a semiconductor chip).

Contribution addresses the overcompensation problem by placing an important reference point prominently before the jury. When a manufacturer is sued for patent infringement, it will be able to implead and seek contribution from the component supplier that included the patented technology in its component. The jury will have to calculate the component supplier's share of the liability. Behavioral economic studies have demonstrated that people are good at relative valuations (i.e., coherence). If patent juries exhibit coherence, they will frame their determinations using the price of the supplier's components, which should result in lower royalty awards based on the value of the individual components instead of the larger multi-component products.

In Part II, I explain that reasonable royalty awards in patent cases are excessive. Before arriving at this conclusion, I first disentangle the discussion over the possible existence of overcompensation from the debate about its causes. Mark Lemley and Carl Shapiro addressed these issues together by arguing that patent royalties are systematically too high due to "patent holdup" and "royalty stacking."[2] In response, their critics have also tied the two issues together and, by attacking the economic model underlying Lemley and Shapiro's theory, they have concluded that reasonable royalties are not excessive. Regardless of whether patent holdup and royalty stacking are serious problems, the data strongly suggests that royalties in component patent cases are too high. Technology products incorporate hundreds, if not thousands, of patents. Yet Lemley and Shapiro reported that the average royalty rate in component patent cases was 9.98% of the entire product. Even if there is a reasonable dispute over the *source* of overcompensation, Lemley and Shapiro's critics have failed to seriously challenge the *existence* of overcompensation in component patent cases.

In Part III, I describe three theories that are intended to prevent excessive royalty awards in component patents cases, as well as each theory's weaknesses. Two of those theories, permissive apportionment and the "entire market" rule, exist under current law and have proven ineffective at curtailing overcompensation. The third theory, mandatory

2. Patent holdup refers to the situation where the patentee can threaten an injunction after the accused infringer has already incurred sunk costs. Royalty stacking refers to the fact that many patents cover the same product. *See infra* notes 5–12 and accompanying text.

apportionment, is a proposed reform that has no chance of passing Congress due to a deadlock between the technology and pharmaceutical industries.

In Part IV, I argue that patent law should adopt tort law's theory of contribution. Under this proposal, a manufacturer of a multi-component product could implead its component supplier and demand that the supplier share in any liability. Although contribution has been traditionally thought of as a mechanism for equitably-spread liability among different parties responsible for infringement, I argue that the primary benefit of applying contribution to patent law will be to lower the royalties awarded in component patent cases.

Relying on observations from behavioral economics, I explain how juries overcompensate component patentees in the current system. Patentees now generally choose to sue manufacturers of multi-component products. This choice allows patentees to place anchors that frame juries' determinations using the value of a multi-component product as opposed to the value of component itself. Consequently, royalty awards for component patents look like the awards we would expect for patents that cover the entire multi-component product and not just the component itself. Quite simply, these awards are too high. However, contribution would change that result by taking advantage of people's natural ability to make "coherent" valuations. By requiring the jury to determine the component supplier's liability, contribution places an important reference point prominently before the jury, namely, the price of the component. Once juries appreciate that information, they will use it to frame their determination. This should result in lower royalty awards that are actually based on the value of the component and not the value of the larger multi-component product.

Applying contribution to patent law will also equitably spread liability among the responsible parties. Although parties have the ability negotiate indemnification agreements and thereby spread their risk, contribution still has advantages in this context as well. In cases where the parties are not in privity or when they have not negotiated their relative risks, contribution will equitably assign liability among the responsible parties.

In Part V, I explain why the courts can adopt contribution now. Several district courts have incorrectly rejected the application of

contribution in patent law. These courts have mistakenly conflated contributory infringement under 35 U.S.C. § 271(c) with the theory of contribution and have found that the latter preempts the former. However, contributory infringement and contribution are distinct theories. Contributory infringement is a type of accessory liability. It holds some parties liable for infringement even though they do not directly infringe a patent themselves. In contrast, the tort theory of contribution gives a party who is jointly and severally liable the right to demand that other jointly and severally liable parties help pay any damages.

I also argue in Part V that the courts have the authority to adopt contribution in patent law. The Supreme Court has said that the courts have that authority in some areas of substantive law but not in others. These decisions outline three situations where the federal courts may adopt contribution: (1) in substantive areas where the courts have historically elaborated a general common law, (2) where a statute implies a right of contribution, and (3) where contribution is ancillary to other portions of the law that the courts have already developed. Applying contribution to patent law fits squarely within the third category. Because the courts have established that infringers are jointly and severally liable through patent common law, the courts can also adopt the ancillary theory of contribution.

Finally, in Part VI, I discuss next steps. First, I discuss the need for additional empirical work. I only theorize why overcompensation occurs. Although well-established concepts from behavioral economics support this theory, it is not certain that those concepts translate to the patent damages context. Thus, there is no proof that patent juries will act in the manner described. Second, I try to identify, but not resolve, some challenging issues that will arise under this new regime. Specifically, I anticipate how companies and patent litigators might react to a world with contribution. I also discuss the extraterritorial implications of contribution. There are undoubtedly additional downstream affects that will emerge if contribution theory is adopted. But this article only attempts to address some of the most likely consequences.

II. DISENTANGLING OVERCOMPENSATION FROM PATENT HOLDUP AND ROYALTY STACKING

Before describing how contribution will address excessive royalty awards, I first discuss whether there is an overcompensation problem at all. Unfortunately, the debate over the *existence* of overcompensation in patent law has been entangled in the related quarrel over the possible *source* of any overcompensation. Mark Lemley and Carl Shapiro's *Patent Holdup and Royalty Stacking* article is at the center of both discussions.[3] Relying on economic modeling and an empirical study, Lemley and Shapiro say that reasonable royalty awards in patent cases are systematically too high due to a combination of patent holdup and royalty stacking. Under this theory, the problem is particularly pronounced when the patented technology covers only one small component of a larger complex product. I agree with *part* of this analysis. In particular, this article relies on the data they collected from reported patent decisions to show the existence of overcompensation.

However, I focus on another potential cause of this problem: that overcompensation can also be explained, at least in part, by behavioral economics and anchors that cause juries to calculate royalty awards based on the value of the larger multi-component products (e.g., an LCD TV) as opposed to the individual components (e.g., a semiconductor chip). This article takes no position on whether patent holdup and royalty stacking also cause overcompensation. Nonetheless, I briefly discuss these theories here because critics who argue that there is no overcompensation do so by criticizing patent holdup and royalty stacking theory.

As a starting point, Lemley and Shapiro say that the ideal royalty is the royalty that the patentee and infringer would negotiate prior to any investment.[4] Holdup occurs when a patentee can use an injunction to threaten a defendant after it has already made a substantial investment in

3. Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991 (2007).

4. *Id*. at 1996–99. Lemley and Shapiro call this the "benchmark royalty level" and say it can be described by the formula $\theta \times B \times V$, where θ is the patent strength, B is the bargaining skill of the patent holder, and V is the value of the patented feature to the end product in comparison to the next best alternative.

the design and development of its product.[5] If the costs associated with the defendant moving to a non-infringing alternative are high, a patentee can obtain at least a portion of those costs in any recovery.[6] Thus, the patentee's *ex post* recovery is higher than the rate the parties would have negotiated *ex ante* (i.e., the amount the defendant would have paid for the patent before making any investments). This is an inefficient result because it allows the patentee's recovery to include costs that have nothing to do with the patented invention.[7] Surprisingly, Lemley and Shapiro's economic model found that overcompensation occurred even when the patent holder approached the defendant prior to any investment.[8] The accused infringers tend to litigate, especially when confronted with weak patents. Holdup problems still occur because litigation takes place after the accused infringers developed their product.[9] As a result, even when there is a later settlement, the value of that settlement will reflect an element of holdup.

"Royalty stacking refers to situations in which a single product potentially infringes on many patents and thus may bear multiple royalty burdens."[10] Of course any holdup problem is multiplied by the number of patents that cover a product. Lemley and Shapiro argue that royalty stacking causes various additional complications that result in an inefficient reduction in output.[11] For the purposes of the current analysis, the specific details of these problems are not relevant.

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5. *Id.* at 1992–93.

6. Bernard H. Chao, *After* eBay, Inc. v. MercExchange*: The Changing Landscape for Patent Remedies*, 9 MINN. J.L. SCI. & TECH. 543, 561–62 (2008) (explaining how a patentee's leverage is increased in view of high design around costs).

7. According to Lemley and Shapiro, "[t]here is a consensus among antitrust authorities that bilateral ex ante royalty negotiations promote competition and innovation by mitigating patent holdup." Mark A. Lemley & Carl Shapiro, *Reply: Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 2163, 2164–65 (2007) (footnote omitted); *see also* Chao, *supra* note 6, at 561 (noting that "the cost savings associated with a design around has no relationship to the value that the patented invention contributes to a product; it is simply the unfortunate side effect of resolving patent disputes after products are designed and sold.").

8. Lemley & Shapiro, *supra* note 3, at 2004.

9. *Id.* at 2004–05.

10. *Id*. at 1993.

11. *Id.* at 2010–16 (discussing the problems of (1) rent splitting, (2) shutdown, and (3) Cournot complements).

Although Lemley and Shapiro have their supporters,[12] they also have numerous critics. John Golden,[13] Gregory Sidak,[14] and Einer Elhauge[15] challenge the assumption that the patent holder should receive what it could have negotiated *ex ante* (before the defendant began its infringement). Although Golden concedes that patent holdup may occur in certain situations, he argues that Lemley and Shapiro have failed to prove that such problems are systematic.[16] Elhauge goes one step further and argues that many of Lemley and Shapiro's assumptions are wrong. Elhauge says that when the correct assumptions are used, the results show that patentees are actually undercompensated.[17] Thomas Cotter summarizes the differences between the two camps:

> The disagreement between Lemley and his coauthors, on the one hand, and critics such as Elhauge and Sidak, on the other, on whether patent holdup is a form of market failure, therefore to a large extent boils down to a disagreement over how best to divide the gains from innovation between patentees and downstream users.[18]

Lemley and Shapiro's critics have focused too closely on the

12. Thomas F. Cotter, *Patent Holdup, Patent Remedies, and Antitrust Responses*, 34 J. CORP. L. 1151, 1172 (2009) (arguing that Lemley and Shapiro's theoretical model is correct); Mark A. Lemley & Philip J. Weiser, *Should Property or Liability Rules Govern Information?*, 85 TEX. L. REV. 783, 786–88 (2007).

13. John Golden, Commentary, *"Patent Trolls" and Patent Remedies*, 85 TEX. L. REV. 2111, 2139–40 (2007) ("[Lemley and Shapiro] beg the essential question by assuming that a patent holder should receive no more than it would receive in the absence of a credible holdout threat . . . .").

14. J. Gregory Sidak, *Holdup, Royalty Stacking, and the Presumption of Injunctive Relief for Patent Infringement: A Reply to Lemley and Shapiro*, 92 MINN. L. REV. 714, 742 (2008) ("In light of this option value to the infringer, one begins to see how the hypothetical benchmark royalty rate is in fact biased downwards.").

15. Einer Elhauge, *Do Patent Holdup and Royalty Stacking Lead to Systematically Excessive Royalties?*, 4 J. COMPETITION L. & ECON. 535, 541 (2008) ("The Lemley-Shapiro analysis critically depends on their assumption that the optimal benchmark royalty is θBv, which they base on the claim that such a royalty rate 'provides an efficient reward to innovators.' In fact, their recommended benchmark bears no relation to the reward necessary to efficiently incentivize invention. Indeed, given the premises, any royalty rate below $v\theta$ would underincentivize many socially desirable inventions.").

16. Golden, *supra* note 13, at 2135 ("Hence, consideration of how licensing negotiations look to the patent holder provides substantial reason to suspect that contrary to Lemley and Shapiro's conclusions, patent holders may not be 'systematically overcompensated' even if they can use the threat of an injunction to make credible holdout threats under certain circumstances.").

17. Elhauge, *supra* note 15, at 537.

18. Cotter, *supra* note 12, at 115.

economic formulation of the holdup and royalty stacking issue and have largely ignored the empirical data that was provided. Even if Lemley and Shapiro are wrong about the *source* of the problem (i.e., patent holdup and royalty stacking), their data still suggests that they are right about the *existence* of an overcompensation problem. This is particularly true when the patent involved only covers a single component of a multiple component product.

Lemley and Shapiro analyzed royalty rates in reported decisions between 1982 and 2005.[19] The study found that the average royalty rate across all cases was 13.13% of the price of an infringing product.[20] Breaking down the numbers further, royalty rates for cases involving component inventions averaged 9.98% while the rate for patents that covered an integrated product averaged 14.71%.[21] An example of a component patent might be technology that is related to implementing wireless technology in a personal computer. Typically, that technology is found in a single component, such as the wireless card, of the larger multi-component product, the computer. As expected, awards for component patents are lower than awards for integrated product patents. However, the difference is extremely small when you consider how many innovations may be found in a single product. Lemley and Shapiro observe that "the reduction in royalty rate for component inventions is equivalent to the conclusion that there are on average less than 1.5 components in a multi-component invention."[22]

But that number vastly understates the number of components found in today's technology products. Televisions, cell phones, and computers have many components incorporating hundreds, if not thousands, of patented inventions.[23] Varying estimates exist regarding the number of patents required to produce a single product. For example, Goodman and Myers examined the patents and patent applications that parties

19. Lemley & Shapiro, *supra* note 3, at 2030–31 (the sample size was small—forty seven cases).

20. *Id.* at 2032.

21. *Id*.

22. *Id.* at 2034.

23. *See* FED. TRADE COMM'N, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW POLICY 35 (2003) [hereinafter INNOVATION] (discussing how the large number of incremental innovations results in patent thickets in the hardware and semiconductor fields), *available at* http://www.ftc.gov/os/2003/10/ innovationrpt.pdf.

declared essential to two different third-generation cellular technologies.[24] 6,872 patents and patent applications were declared essential to the Wideband Code Division Multiple Access (WCDMA), and 924 patents and patent applications were declared essential to the CDMA 2000 standard.[25] That being said, an evaluation panel estimated that nearly 80% of the patents were actually not essential to the cellular standards.[26] Nevertheless, discounting the reported numbers by 80% still leaves a hefty 1,374 patents and patent applications "essential" to WCDMA and 184 to CMDA 2000.

Michael Kramer provides more modest benchmarks. Relying on data from various standards bodies, he found 101 essential patents for the Global System for Mobile Communications (GSM) standard cellular phones, 35 essential patents for the IEEE 802.11 local wireless standard, and 87 essential patents for MPEG-2 and MPEG-4 standards.[27]

Both studies undoubtedly underestimate the number of patents that a typical technology product uses. First, as Lemley and Shapiro note in the context of the 802.11 standard, many companies provided letters of assurance regarding licensing terms but did not identify specific patents that are essential to the standard.[28] Second, the only companies that disclose patents to standards bodies are those that participate in the making of that standard. Thus, other companies including non-practicing entities will not have disclosed patents that they consider essential.[29] Finally, both studies only identified essential patents.

24. David J. Goodman & Robert A. Myers, *3G Cellular Standards and Patents*, PROCEEDINGS OF IEEE INTERNATIONAL CONFERENCE ON WIRELESS NETWORKS, COMMUNICATIONS AND MOBILE COMPUTING 2 (2005), *available at* http://eeweb.poly.edu/dgoodman/wirelesscom2005.pdf.

25. Companies generally have an incentive to over designate the number of essential patents and patent applications they have. Failure to disclose a patent during the development of a standard can result in fraud allegations if a company later asserts that patent against products that use the standard. *See* Qualcomm Inc. v. Broadcom Corp. 548 F.3d 1004 (Fed. Cir. 2008) (finding two patents could not be unenforced against those that practice a standard because a patent owner did not comply with the patent policy of the standard-setting organization).

26. Goodman & Meyers, *supra* note 24, at 5.

27. Michael S. Kramer, *Valuation and Assessment of Patents and Patent Portfolios Through Analytical Techniques*, 6 J. MARSHALL REV. INTELL. PROP. L. 463, 475–76 (2007).

28. Lemley & Shapiro, *supra* note 3, at 2027.

29. A good example of this is found in Commonwealth Scientific and Indus. Research Org. v. Buffalo Tech. (USA), Inc., NO. 6:06-CV-324, 2006 WL 3317080 (E.D. Tex. Nov. 13, 2006), *vacated in part by* Commonwealth Scientific and Indus. Research Org v. Buffalo Tech. (USA), Inc., 542 F.3d 1363

However, technology products inevitably incorporate non-essential patented technology. For example, cell phone manufacturers may not need to use any *specific* microprocessor, but they will have to use *some* microprocessor, which involves using the corresponding patented technology.

Regardless of which numbers are used, one can safely suggest that a typical technology product probably uses over one hundred patents. When Lemley and Shapiro's data is viewed in this light, even Golden admits that "it is sufficiently alarming to demand further investigation."[30] Yet, Elhauge and Sidak fail to explain how this data is consistent with their theories of undercompensation. Indeed, Elhauge does not discuss the empirical data at all. Sidak only summarizes the results without attempting to explain them.[31]

Golden does identify some weaknesses in the empirical analysis. For example, he correctly points out that the sample size of the empirical study was small (as the authors themselves admit).[32] Lemley and Shapiro examined only forty-seven court reported decisions. Moreover, Golden suggests that there was a sampling bias. Patents that are actually involved in court reported decisions probably add more value to the overall product than typical patents.[33] However, these observations do not adequately explain why reasonable royalty awards in component patent cases should average 9.98% of the price of the total infringing product.

Although patent holdup and royalty stacking may be one source of overcompensation, this article focuses on another potential cause: predictably irrational jury behavior.[34] As further described in Part IV,

(Fed. Cir. 2008). CSIRO successfully argued that products that practiced the 802.11 standard infringed their patent. Yet, there is no indication that they ever disclosed their patent to the standards committee. Indeed, there is no reason for them to have done so given that they did not participate in the creation of the standard. The Federal Circuit vacated part of the lower court decision on validity. On July 13, 2009, the parties announced that the settled the lawsuit.

30. Golden, *supra* note 13, at 2147.

31. Sidak, *supra* note 14, at 726–27.

32. Lemley & Shapiro, *supra* note 3, at 2030 (characterizing their data set as "surprisingly small."); Golden, *supra* note 13, at 2146.

33. Golden, *supra* note 13, at 2146 ("[P]atents that become the basis for court awarded damages may be exceptionally likely to involve inventions to which an unusually high proportion of overall profits might be attributed . . . .").

34. Patent holdup and royalty stacking actually predict that the *negotiated* reasonable royalty rate

our current understanding of human behavior predicts that juries overestimate the value a component patent provides to a multi-component product. I then explain why applying contribution to patent law can take advantage of other aspects of human behavior and cause juries to arrive at lower royalty awards in component patent cases.

III. CURRENT APPROACHES

A number of mechanisms exist to address excessive reasonable royalty awards in component patent cases. This Part discusses three of those mechanisms—permissive apportionment, mandatory apportionment, and the entire market rule—and explains why they have not successfully addressed overcompensation.

A. Permissive Apportionment and the Status Quo

The theory of apportionment is designed to prevent overcompensation, especially in the area of component patents.[35] Under apportionment theory, the patent holder's remedy should be based on the value the patented invention adds to the infringing product or process.[36] The theory attempts to isolate this value by preventing a reasonable royalty analysis from capturing value attributable to two other sources—the prior art and portions of the infringing product or process that are not covered by the patented invention.[37]

The current system already *permits* juries to consider apportionment. Under the *Georgia-Pacific* framework, jurors are instructed to consider a hypothetical negotiation and ascertain the royalty upon which the parties would have agreed had they successfully negotiated an agreement just before infringement began.[38] Juries are given fifteen

will be too high. Lemley & Shapiro, *supra* note 3, at 1994 (discussing threats and *negotiated* royalty rates). However, Lemley and Shapiro's empirical data shows that the average royalty awarded *in court* is excessive. Thus, Lemley and Shapiro's data actually corresponds more closely to this article's discussion of jury behavior.

35. *See* Eric E. Bensen & Danielle M. White, *Using Apportionment to Rein in the* Georgia-Pacific *Factors*, 9 COLUM. SCI. & TECH. L. REV. 1 (2008).

36. *Id.*

37. *Id.*

38. Georgia-Pacific Corp. v. U.S. Plywood Corp., 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970).

factors to consider when making this determination.[39] Factor nine discusses the utility of the patented invention over the prior art and factor thirteen relates to the value of the invention as distinguished from non-patented parts of the product. Thus, two of the fifteen *Georgia-Pacific* factors directly call out apportionment principles. Typical jury instructions list all the *Georgia-Pacific* factors and inform juries that they *may* consider each of these factors.[40] This illustrates how the current system employs what I refer to as "permissible apportionment."

Nevertheless, the 9.98% average royalty rate reported by Lemley and Shapiro shows that juries are not actually using apportionment concepts

39. *Id*. The factors are: (1) the royalties received by the patentee for the licensing of the patent in suit, proving or tending to prove an established royalty; (2) the rates paid by the licensee for the use of other patents comparable to the patent in suit; (3) the nature and scope of the license, as exclusive or non-exclusive; or as restricted or non-restricted in terms of territory or with respect to whom the manufactured product may be sold; (4) the licensor's established policy and marketing program to maintain his patent monopoly by not licensing others to use the invention or by granting licenses under special conditions designed to preserve that monopoly; (5) the commercial relationship between the licensor and licensee, such as whether they are competitors in the same territory in the same line of business; or whether they are inventor and promoter; (6) the effect of selling the patented specialty in promoting sales of other products of the licensee, that existing value of the invention to the licensor as a generator of sales of his non-patented items, and the extent of such derivative or convoyed sales; (7) the duration of the patent and the term of the license; (8) the established profitability of the product made under the patent; its commercial success; and its current popularity; (9). *the utility and advantages of the patent property over the old modes or devices, if any, that had been used for working out similar* result;; (10) the nature of the patented invention, the character of the commercial embodiment of it as owned and produced by the licensor; and the benefits to those who have used the invention to the extent to which the infringer has made use of the invention; and any evidence probative of the value of that use; (12) the portion of the profit or of the selling price that may be customary in the particular business or in comparable businesses to allow for the use of the invention or analogous inventions; (13) *the portion of the realizable profit that should be credited to the invention as distinguished from non-patented elements, the manufacturing process, business risks, or significant features or improvements added by the infringer*; (14) the opinion testimony of qualified experts; (15) the amount that a licensor (such as the patentee) and a licensee (such as the infringer) would have agreed upon (at the time the infringement began) if both had been reasonably and voluntarily trying to reach an agreement; that is, the amount which a prudent licensee—who desired, as a business proposition, to obtain a license to manufacture and sell a particular article embodying the patented invention—would have been willing to pay as a royalty and yet be able to make a reasonable profit and which amount would have been acceptable by a prudent patentee who was willing to grant a license. *Id*. at 1120 (emphasis added).

40. The Federal Circuit Bar Association Model Patent Jury Instructions, Instruction 6.7 lists the *Georgia-Pacific* factors and says that the jury may consider them. FED. CIRCUIT BAR ASS'N, MODEL PATENT JURY INSTRUCTIONS 6.7 (2009), *available at* http://memberconnections.com/olc/filelib/LVFC/cpages/9005/Library/purchase%20items/Jury%20Instructions%20November%202009.pdf.

in component cases. Thus, there is a disconnect between the law as theorized and the law as practiced.[41] This has led to various proposed reforms that *require* apportionment.

B. Mandatory Apportionment and Legislative Gridlock

Led by some of its largest companies,[42] the high tech industry has lobbied Congress to adopt a form of "mandatory apportionment."[43] Indeed, some form of mandatory apportionment has appeared in at least four different versions of patent reform legislation.[44] The following proposed language is representative of these proposals: "The court shall exclude from the analysis the economic value properly attributable to the prior art, and other features or improvements, whether or not themselves patented, that contribute economic value to the infringing product or process."[45]

The pharmaceutical industry has opposed legislation containing mandatory apportionment provisions.[46] These objections take three

41. Part IV, *infra*, provides an explanation for the disconnect.

42. The Coalition for Patent Fairness' members include Apple, Autodesk, Business Software Alliance, Cisco Systems, Dell, Google, HP, Information Technology Industry Council, Intel, Micron Technology Inc., Microsoft, Oracle, Palm Inc., RIM, SAP, Symantec, and TechNet.

43. *What Needs to Change*, COALITION FOR PATENT FAIRNESS, http://www.patentfairness.org/learn/what (last visited Jan. 4, 2012) ("Congress should make clear that when calculating damages, courts should focus on the invention's contribution to the value of the infringing product, and not the value of the whole product or system that incorporates the invention.").

44. For example, Patent Reform Act of 2007, H.R. 1908, S. 1145, 110th Cong. (2007) (as introduced in the Senate, Apr. 18, 2007), would require a judge to conduct a mandatory apportionment analysis to ensure "that a reasonable royalty is applied only to that economic value properly attributable to the patentee's specific contribution over the prior art." H.R 1908, the Patent Reform Act of 2007 (as passed Sept. 7, 2007) contains this language as well. Under S. 1145 (as reported in Senate, Jan. 24, 2008), in the absence of an established royalty based on marketplace licensing, the reasonable royalty inquiry must determine the economic value of the "claimed invention's specific contribution over the prior art."

45. H.R. 1908, 110th Cong. (2007) (containing the language found in the bill when it was introduced to the House of Representatives on April 18, 2007; however, the proposed language was eliminated in later versions); *see also* S. 1145, 110th Cong. (2007) (offering similar language).

46. Pharm. Research and Mfrs. of Am. (PhRMA) Re: Evolving IP Marketplace—Comment, Project No. P093900 18–21 (Feb. 10, 2009), http://www.ftc.gov/os/comments/iphearings/540872-00030.pdf [hereinafter PhRMA Comment] (comment by PhRMA to Federal Trade Commission); *Patent Reform in the 111th Congress: Legislation and Recent Court Decisions: Hearing Before the S. Comm. on the Judiciary*, 111th Cong. 11–17 (2009) [hereinafter Johnson Statement] (detailing the prepared

primary forms. First, the pharmaceutical industry complains that apportionment will unreasonably decrease the value of patents and undercompensate patent holders.[47] Apportionment requires a dissection of the claim elements. Since, at some level, all inventions can be considered combinations of old elements, the pharmaceutical industry argues that apportionment would inevitably result in "grossly undervaluing" inventions.[48]

Second, the pharmaceutical industry argues that apportionment would complicate patent trials by requiring juries to compare a patent against the prior art to determine the incremental value that the patent contributes.[49] Reviewing the state of the prior art at trial is very time and resource-consuming. Former Chief Judge Michel of the Federal Circuit agrees with this criticism. He says that apportionment would result in a "massive undertaking for which courts are ill-equipped."[50] This criticism only applies to one part of apportionment theory: preventing the jury from capturing value attributable to the prior art. Because juries currently learn about the entire infringing process as part of the evidence on infringement, asking them to exclude value attributable to portions of the infringing product or process that are not covered by the patented invention is not as time-consuming.

Finally, the pharmaceutical industry says that the current system of permissive apportionment is sound because it gives courts the discretion to consider apportionment when appropriate.[51] There is some evidence that courts are becoming more proactive in considering apportionment.

testimony of Philip S. Johnson, Chief Patent Counsel, Johnson & Johnson, on behalf of the Coalition for 21st Century Patent Reform).

47. *Id.* at 19.

48. *Id.* at 19 ("This proposed methodology is problematic, in part because at some level all inventions can be considered combinations of old elements, albeit ones that are combined in a new way. A forced dissection of a claimed invention into its individual parts would inevitably result in grossly undervaluing the invention."); *see also* Johnson Statement, *supra* note 46, at 15.

49. *Id*. at 19–20.

50. Letter from Hon. Paul R. Michel, Chief Judge of the U.S. Appeals Court for the Federal Circuit, to Sen. Patrick Leahy and Sen. Orrin Hatch 2 (May 3, 2007) [hereinafter Michel Letter], *available at* http://www.patentsmatter.com/media/issue/legislation/20070503_Michel.pdf; *see also* Chief Judge Paul Michel, *Lecture: Innovation, Incentives, Competition, and Patent Law Reform: Should Congress Fix the Patent Office and Leave Litigation Management to the Court*, 20 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 1135, 1162 (2010) [hereinafter Michel, *Patent Law Reform*].

51. *See* PhRMA Comment, *supra* note 46, at 20–21; *see also* Michel Letter, *supra* note 50.

In *Lucent Technologies v. Gateway*, the Federal Circuit vacated a $350 million plus damages award against Microsoft.[52] An important part of that analysis focused on the fact that the infringing feature was "but a tiny feature of one part of much larger software program [Outlook]."[53] Former Chief Judge Michel has even cited to *Lucent Technologies* to show that the Federal Circuit has "pretty well solved" the problem of excessive reasonable royalty awards.[54] But vacating awards or granting remittitur after trial is not an efficient solution. A truly effective reform would prevent juries from issuing excessive awards in the first place.

In an attempt to resolve the stalemate between the technology and pharmaceutical industries, recent versions of patent reform legislation included the so-called "gatekeeper compromise" that does not require apportionment.[55] Instead, the draft legislation would have forced judges to act as gatekeepers to ensure that only those methodologies and factors that are relevant to making the damages determination are used. The relevant language provided that:

> *Sufficiency of Evidence*—Prior to the introduction of any evidence concerning the determination of damages, upon motion of either party or *sua sponte*, the court shall consider whether one or more of a party's damages contentions lacks a legally sufficient evidentiary basis. After providing a nonmovant the opportunity to be heard, and after any further proffer of evidence, briefing, or argument that the court may deem appropriate, the court shall identify on the record those methodologies and factors as to which there is a legally sufficient evidentiary basis, and the court or jury shall consider only those methodologies and factors in making the determination of damages under this section. The court shall only permit the introduction of evidence relating to the determination of damages that is relevant to the methodologies and factors that the court determines may be considered in making the damages determination.[56]

It is unclear how, or even if, the gatekeeper solution improves on the

52. Lucent Tech., Inc. v. Gateway, Inc., 580 F.3d 1301, 1332 (Fed. Cir. 2009); Uniloc USA, Inc. v. Microsoft Corp., 632 F.3d 1292 (Fed. Cir. Jan. 4, 2011), *rehearing denied*, No. 2010-1035, 2011 U.S. App. LEXIS 7629 (Fed. Cir. Mar. 22, 2011) (affirming the district court's decision to grant a conditional new trial on damages).

53. *Lucent Tech.*, 580 F.2d at 1332.

54. Michel, *Patent Law Reform*, *supra* note 50, at 1153.

55. Patent Reform Act of 2011, S. 23, 112th Cong. § 4(b) (2011).

56. *Id.* at § 4(b)(3).

existing mechanism used to exclude unreliable expert testimony. Federal Rule of Evidence 702 already requires judges to scrutinize expert testimony to determine if "the reasoning or methodology underlying the testimony is scientifically valid and . . . [if] that reasoning or methodology properly can be applied to the facts in issue."[57] Even this very modest compromise was recently was dropped, and the latest version of patent reform says nothing about damages.[58] Thus, current efforts at requiring apportionment have failed, and the latest Congressional efforts do not appear to meaningfully improve the system.

C. Flaws With The Entire Market Rule

The entire market rule is yet another theory designed to prevent excessive royalty awards in component patent cases. This rule provides that a patentee can recover damages based on the entire market value of the accused product only where the patented feature creates the "basis for customer demand" or "substantially create[s] the value of the component parts."[59] Commentators have criticized the entire market rule for both its underlying assumptions and its results. As Brian Love and Mark Lemley observe, a single patent is almost never responsible for the customer demand.[60] Other features, including other patents, the defendant's reputation, materials, and even marketing, contribute some to customer demand.[61] Love also points out that the courts have interpreted the rule so broadly that patentees have been able to recover damages for components that are unconnected to the infringing element of the accused device.[62] As a result, Love concludes that the entire

57. Daubert v. Merrell Dow Pharm., Inc., 509 U.S. 579, 592–593 (1993). The *Daubert* decision even uses the "gatekeeper" language. *Id.* at 597.

58. America Invent Act, S. 23, 112th Cong. (2011) (as passed by Senate, Mar. 8, 2011).

59. Lucent Tech., Inc. v. Gateway, Inc., 580 F.3d 1301, 1336 (Fed. Cir. 2009); Rite-Hite Corp. v. Kelley Co., 56 F.3d 1538, 1549–50 (Fed. Cir. 1995).

60. Brian J. Love, Note, *Patentee Overcompensation and the Entire Market Rule*, 60 STAN. L. REV. 263, 278 (2007); Mark Lemley, *Distinguishing Lost Profits from Reasonable Royalties*, 51 WM. & MARY L. REV. 655, 663 (2009).

61. Lemley, *supra* note 60, at 663.

62. Love, *supra* note 60, at 271 (citing Juicy Whip, Inc. v. Orange Bang, Inc., 382 F.3d 1367, 1372–73 (Fed. Cir. 2004) (allowing damages award for lost profits on sale of syrup used in patented

market rule also contributes to overcompensation.[63]

Moreover, it is unclear if judges are willing to use the entire market rule to exclude evidence, particularly when the patentees have no other damages theory to offer. For example, in *Cornell v. Hewlett Packard I*, Federal Circuit Judge Rader, sitting as a district court judge by designation, initially excluded expert testimony on damages based on the entire market rule.[64] However, Judge Rader was reluctant to leave Cornell without a damages theory and gave Cornell the opportunity to return the next day of trial and offer different testimony.[65] Even though the new testimony suffered from the same flaws, Judge Rader allowed the testimony. [66] Eventually, he granted HP's motion for judgment as a matter of law or, in the alternative, remittitur.[67]

Two other recent cases illustrate different ways that courts avoid the harsh effect of the entire market rule. In *Lucent Technologies*, the Federal Circuit did not prevent the patentee from seeking a royalty on the entire product because there was simply no market value for the infringing component.[68] Thus, the plaintiff was allowed to ask for damages based on the entire market value of Microsoft Outlook even though the patented method clearly was not the basis for the demand for the product.[69] In another case involving Microsoft, the trial court initially denied Microsoft's motion to exclude plaintiff's testimony

juice dispenser)); Paper Converting Mach. Co. v. Magna-Graphics Corp., 745 F.2d 11, 23 (Fed. Cir. 1984) (affirming damages award based on separate auxiliary equipment sold as part of a line of paper-winding products).

63. Love, *supra* note 60, at 272.

64. Cornell Univ. v. Hewlett Packard Co. (*Cornell I*), No. 01-CV-1974, 2008 WL 2222189, at *3 (N.D.N.Y. May 27, 2008); *see also* Bernard Chao, *Damages: The Courts Beat Congress to Patent Reform (Again)*, LAW360 (Aug. 31, 2009), *available at* http://chsblaw.com/downloads/The_Courts_Beat_Congress_To_Patent_Reform.pdf (discussing the *Cornell* decisions).

65. Cornell Univ. v. Hewlett Packard Co. (*Cornell II*), 609 F. Supp. 2d 279 at 284 (N.D.N.Y. 2009) ("Instead of leaving Cornell without proof of damages, this court instead offered Cornell an opportunity to return the next day and offer testimony [on a different theory].").

66. *Id.* at 287 ("During the presentation of its damages case, Cornell did not heed this court's warning that any royalty base proffer must account for the fact that the '115 patent is a component of a component of Hewlett–Packard's server and workstation products.").

67. *Id.* at 292.

68. Lucent Tech., Inc. v. Gateway, Inc., 580 F.3d 1301, 1339 (Fed. Cir. 2009).

69. *Id.* at 1336–39.

based on the entire market rule[70] but later said that Microsoft was entitled to a new trial because of the objectionable part of the plaintiff's expert testimony.[71] Thus, even if the entire market rule has some intuitive appeal, at least some judges appear unwilling to categorically exclude awarding a royalty on the whole product. Instead, these judges use the rule to rein in an excessive award after trial. Of course, any solution that relies on changing verdicts after trial is highly inefficient.

In sum, the current law includes both the entire market rule and permissive apportionment. However, judges do not always require that the patentee satisfy the entire market rule to obtain a royalty on the whole product, and juries do not appear to be applying apportionment principles. Moreover, empirical data confirms that these mechanisms are insufficient. Efforts to adopt a form of mandatory apportionment have also failed.

In Part IV, I propose a different theory of apportioning damages—the theory of contribution, borrowed from tort law, which applies only when there are multiple parties responsible for an infringing product. Whereas the current system tolerates juries that ignore apportionment principles, contribution can more firmly implant such notions into the juries' minds. The theory also does not depend on the discretion of judges. Moreover, since contribution will primarily apply to the technology industry where different companies are frequently responsible for the numerous components, contribution avoids the technology-pharmaceutical stalemate that held up mandatory apportionment. Even better, as I describe in Part V, the courts can adopt contribution without an act of Congress.

IV. THE PROPOSAL: ADOPTING TORT LAW'S THEORY OF CONTRIBUTION

This article recommends that patent law adopt tort law's theory of contribution. The Restatement of the Law (Third) of Torts describes contribution as follows:

70. Uniloc USA, Inc. v. Microsoft Corp., 632 F. Supp. 2d 147, 151 (D.R.I. 2009) (denying Microsoft's motion to exclude Uniloc's testimony); Uniloc USA, Inc. v. Microsoft Corp., 640 F. Supp. 2d 150, 185 (D.R.I. 2009), *rev'd in part, aff'd in part, and vacated in part by* Uniloc USA, Inc. v. Microsoft Corp., 632 F.3d 1292 (Fed. Cir. 2011).

71. *Id.* at 185 (affirming the trial court's decision to grant a new trial on damages).

> When two or more persons are or may be liable for the same harm and one of them discharges the liability of another by settlement or discharge of judgment, the person discharging the liability is entitled to recover contribution from the other, unless the other previously had a valid settlement and release from the plaintiff.[72]

Contribution theory is well-suited to patent lawsuits involving multi-component products because there are usually two or more parties responsible for the same infringement. Consider a patent that covers a new technique for displaying information on an LCD television. This kind of technology is typically found in one of the television's components, a graphics semiconductor chip. Both the LCD TV manufacturer and the graphics chip supplier are potentially liable.[73] Under current law, the patentee can sue either party.[74]

If contribution were applied to patent law, manufacturers of multi-component products accused of patent infringement would be able to demand that any supplier of an infringing component share in any potential liability. Under Rule 14 of the Federal Rules of Civil Procedure, a manufacturer would not have to wait until it lost a lawsuit and was found liable for damages. It could implead its supplier and force it to appear as a co-defendant.[75] The parties' share of any liability would be determined by their relative responsibilities.[76]

Adopting contribution in patent law provides two benefits. First, contribution will lower the total royalties awarded in component patent

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72. RESTATEMENT (THIRD) OF TORTS § 23(a) (1999).

73. Even though companies that supply components (e.g. semiconductor companies) are also manufacturers, I refer to these companies as component suppliers to more clearly distinguish them from the companies that make the end products (e.g. TVs), which I call multi-component product manufacturers.

74. The LCD TV manufacturer would be liable under 35 U.S.C.A. § 271(a) (West 2010) for direct infringement for selling a patented invention. Depending on whether the patent covered just a chip of an entire television, the graphics chip supplier would probably be liable under § 271(a) for making and selling a patented invention or for contributory infringement under § 271(c) for selling a component that forms a material part of patented invention.

75. 6 WRIGHT, MILLER & KANE, FEDERAL PRACTICE & PROCEDURE § 1448, at 453–54 (2010) ("If the governing substantive law recognizes a right of contribution, impleader under Rule 14 is a proper procedure which to seek relief from joint tortfeasors.").

76. *See* RESTATEMENT (THIRD) OF TORTS § 23 cmt. e (1999) ("*Proportionate shares.* If a person is otherwise entitled to contribution, the amount of contribution is determined by the percentage responsibility the factfinder assigns to each person.").

cases, an unexpected benefit unique to patent law. Second, as it does in other areas of the law, contribution will provide a new set of default rules that equitably spreads liability among responsible parties.

A. Anchoring Problems with Multi-Component Products

The current literature fails to explain why juries do not apply permissive apportionment principles, even though defendants undoubtedly ask for apportionment at trial and jury instructions discuss apportionment principles. This article looks to behavioral economics theory to offer an explanation.[77] Specifically, subpart A suggests that patentees frame the issue by choosing to sue the manufacturer of the multi-component product instead of the component supplier. Thus, the patentee's initial demand points to the sales price of the multi-component product and uses that as the royalty base (as opposed to the sales price of the component itself). This demand serves to anchor the jury's royalty calculation in a manner that does not reflect apportionment principles. Subpart B then explains how contribution theory would reframe the calculation around the price of the component and thereby lower jury awards.

Consider the example of a patent that covers a new technique for displaying information on a LCD television. The graphics semiconductor chip that contains this technology is just one component of an LCD TV. In our example, the LCD TV sales price is $1,000 and the graphics chip is $30.[78] Typically, patentees will sue the multi-component product manufacturer because patentees believe that they can obtain a larger award based on the higher selling price of the LCD TV.

Ideally, this tactic should not be successful. After all, the value added by the patented technology is the same regardless of whether the patentee sues the chip supplier or the LCD TV manufacturer.

77. Of course one explanation for the failure of permissive apportionment is that the apportionment factors may get lost when considering the all fifteen *Georgia-Pacific* factors. However, this explanation is not sufficient. Not all fifteen factors are applicable in every case and defendants' attorneys will surely highlight the apportionment factors when they apply.

78. 35 U.S.C.A. § 271(a) (West 2010), which governs direct infringement, treats both parties the same since they both make and sell products that contain the patented technology.

Presumably, the royalty rate, as a percentage, should be smaller if the patentee chooses to sue the LCD TV manufacturer. Under the current system of permissive apportionment, attorneys representing the LCD TV manufacturer will point out that the patented invention is only small part of a much larger product. Moreover, these arguments will be buttressed by instructions from the judge that incorporate the thirteenth *Georgia-Pacific* factor. Nonetheless, Lemley and Shapiro's data suggests that juries have been awarding royalties that average 9.98% of the cost of the entire product in these situations, or approximately a $100 royalty on each $1,000 LCD TV.

The concepts of anchoring and arbitrariness can help explain this result. Anchoring generally refers to the observation that an initial arbitrary or irrelevant number inordinately influences an individual's numerical determinations.[79] For example, Dan Ariely, George Loewenstein, and Drazen Prelec conducted a study asking the participants to write down the last two digits of their social security numbers.[80] The participants were then asked what they would pay for various common items including chocolates, wine, a cordless trackball, and a cordless keyboard. Remarkably, the results showed that the last two digits of the participants' social security numbers actually served as an anchor for the price they were willing to pay. In other words, the participants with the highest-ending social security numbers (80-99) were willing to pay the most, and those with the lowest-ending social security numbers (1-20) were willing to pay the least. This example shows how arbitrary an individual's valuation can be.

There is every reason to expect that juries in patent cases are affected by anchors.[81] First, anchoring effects have previously been demonstrated in the context of both personal injury[82] and punitive

79. REID HASTIE & ROBYN M. DAWES, RATIONAL CHOICE IN AN UNCERTAIN WORLD: THE PSYCHOLOGY OF JUDGMENT AND DECISION MAKING 71–72 (2d ed. 2010).

80. Dan Ariely, George Lowenstein & Drazen Prelec, "*Coherent Arbitrariness": Stable Demand Curves without Stable Preferences*, 118 Q. J. OF ECON. 73, 75–77 (2003).

81. EDIE GREENE & BRIAN H. BORNSTEIN, DETERMINING DAMAGES: THE PSYCHOLOGY OF JURY AWARDS 149–173 (2003) (summarizing the academic literature on the effect of anchoring on juries).

82. Gretchen B. Chapman & Brian H. Bornstein, *The More You Ask For, the More You Get: Anchoring in Personal Injury Verdicts*, 10 APPLIED COGNITIVE PSYCHOLOGY 519 (1996). The title of Chapman and Bornstein's study aptly explains its finding.

damages cases.[83] For example, several studies have shown that a plaintiff's award request can have a dramatic effect on the actual award; all other factors being the same, the higher the request, the higher the award.[84] Moreover, people are particularly susceptible to anchoring effects in areas where they lack context.[85] The calculation of a reasonable royalty for a patented invention is a perfect example of an area where juries have no frame of reference.[86] Very few people have experience with this calculation, and if they did, they probably would not be allowed on a patent jury.

In the example of the LCD TV, the patentee (as the plaintiff) would offer its damages case first. The patentee's attorneys would ask the jury to calculate damages using the $1,000 LCD TV as the royalty base. If the patentee asks for 13% royalty (approximately the average royalty Lemley and Shapiro found for all patent cases), the demand would be $13,000,000 assuming that 100,000 LCD TVs were sold. This demand would serve as the anchor for the jury. Although the jury may depart from that anchor based on other information, studies suggest that the jury will likely "underadjust."[87]

This problem is often exacerbated by the tactics defendants use at trial. In general, liability and damages are tried together before the same jury.[88] A defendant who is contesting liability and also arguing damages

83. Reid Hastie et al., *Juror Judgments in Civil Cases: Effects of Plaintiff's Requests and Plaintiff's Identity on Punitive Damage Awards*, 23 LAW AND HUMAN BEHAVIOR 445, 463 (1999).

84. *Id.* at 463 (summarizing several studies).

85. Karen Jacowitz & Daniel Kahneman, *Measures of Anchoring in Estimation Tasks*, 21 PERSONALITY & SOC. PSYCHOL. BULL. 1161, 1161–1166 (1995) (finding that anchoring effects were inversely related to a subject's confident in their judgments, but substantial even in judgments made with high confidence).

86. Eric A. Posner & Cass R. Sunstein, *Dollars and Death*, 72 U. CHI. L. REV. 537, 593 (2005) (finding that in the context of tort law, "Juries lack reference points, so their judgments will depend heavily on the presentation of evidence by lawyers, and on whatever anchors, prejudices, and expectations citizens bring to the jury box."). Patent juries probably have even less context than the juries in the tort cases the authors were discussing.

87. HASTIE & DAWES, *supra* note 79, at 72 ("What happens is that people adjust their estimates from this anchor but nevertheless remain too close to it. When we sequentially integrate information in this manner, we usually 'underadjust.'").

88. PETER S. MENELL, LYNN H. PASAHOW, JAMES POOLEY & MATTHEW D. POWERS, PATENT CASE MANAGEMENT JUDICIAL GUIDE, BIFURCATING DAMAGES § 8.1.1.3 (2009) (noting that while courts may bifurcate damages from liability, in practice most courts decline to do so). In 2011, Congress considered and then dropped legislation that would require courts to sequence patent trials so

is conveying a mixed message. The defendant is telling the jurors that it is not liable, while at the same time advising jurors on what the damages award should be. Defendants fear that presenting a damages case will be interpreted as an admission of liability. At least one study has shown that there is a reasonable basis for this fear. This study found that when defendants offer an alternative damages theory, the likelihood of a liability finding increases.[89] There is also anecdotal evidence that defendants often do not offer an alternative damages award to serve as a "counter anchor."[90] This is true even though counter anchors can be effective.[91] The result is that the only anchor juries often see is the award a patentee requests.

In sum, behavioral economics can explain why the current system of permissive apportionment does not serve to limit reasonable royalty calculations to the value a patented invention adds to an infringing product or process. Patentees are able to place anchors that frame juries' determinations in terms of the value of a multi-component product instead of the value of the component itself. Consequently, royalties for component patents look like the awards we would expect for patents that cover the entire multi-component product and not just the component itself. This description of jury behavior is fully consistent with the 9.98% average royalty rate that Lemley and Shapiro reported for component patents. Fortunately, the theory of contribution

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that the damages phase will occur after liability unless the court found good cause to do otherwise. *See* S. 515, 111th Cong. (2010).

89. Leslie A. Ellis, Don't Find My Client Liable . . . but If You Do: Defense Recommendations, Liability Verdicts, and General Damage Awards (2002) (unpublished Ph.D dissertation, University of Illinois, Chicago) (on file with author) ("Compared to jurors who did not hear a defense recommendation, jurors who heard a defense award recommendation were more likely to find for the plaintiff on liability, but only when the evidence strongly favored the defendant."). Based on my own communications with the author (now a jury consultant), she now believes that the limitation on her findings was an artifact of the particular fact pattern used in the study.

90. Hastie et al., *supra* note 83, at 466 ("In real trials, as in the cases on which we based our experimental materials, it is common for *only* the plaintiff to provide salient anchor values, with the defendant denying liability and arguing for the much less salient (especially when a jury concludes that liability is warranted) value of zero.") (emphasis added).

91. Allan Raitz, Edith Greene, Jane Goodman & Elizabeth F. Loftus, *Determining Damages: The Influence of Expert Testimony on Jurors' Decision Making*, 14 LAW AND HUMAN BEHAVIOR 385, 385–395 (1990) (finding that "Jurors exposed to conflicting expert testimony (i.e., by plaintiff and defense experts) will view the amounts suggested as constituting a range and compute a figure that falls near the middle of the range.").

can ameliorate anchoring effects.

B. Contribution and Coherence

By allowing multi-component manufacturers to ask for contribution and implead component suppliers, the law can fundamentally change the way juries think about damages issues. Although patentees can still frame the issue by choosing to sue the manufacturer of the multi-component product, the theory of contribution would force juries to make a new calculation: they would have to determine the damages owed by the component supplier. Relying on another behavioral economics concept, "coherence," this article argues that juries would align the award against the component supplier with the price of the component. At a minimum, a jury would find that the liability of the component supplier was lower than the sales price of the component. The jury may even calculate damages using the component's sales as a royalty base, as opposed to larger sales of the multi-component product. In either case, contribution should result in substantially lower reasonable royalty awards for component patents than currently observed.

Although people are susceptible to anchors when making valuations, studies have shown that people's relative valuations appear orderly.[92] In other words, their valuations are "coherent."[93] Ariely, Loewenstein, and Prelec's study on the anchoring effects of social security numbers illustrates this concept as well. Even though the prices the participants selected appeared arbitrary (the last two digits of their social security numbers served to anchor their estimates), participants consistently valued a cordless keyboard higher than a cordless trackball and a rare wine higher than an average wine.[94] This observation suggests that juries will behave differently if they are making valuations required by contribution.

92. Ariely, Loewenstein, & Prelec, *supra* note 80, at 76–77 ("Subjects, it seems, did not know how much they valued these items, but they did know the relative ordering within the categories of wine and computer accessories.").

93. *Id.* at 74.

94. *Id.* at 76. Ariely, Loewenstein, and Prelec have called the combination anchoring effects and coherence "coherent arbitrariness."

If patent juries' determinations also exhibit coherence, allowing contribution should result in substantially lower reasonable royalty awards. Returning to our hypothetical, consider the jury's new task under the theory of contribution. The multi-component manufacturer can implead the component supplier and ask for contribution. The jury would be asked to determine not only the reasonable royalty award owed to the patentee but also the shares that both the LCD TV manufacturer and the chip supplier must pay.

The 10% royalty rate on the entire LCD TV was coherent when viewed against the backdrop of a simple lawsuit against the LCD TV manufacturer. Juries should intuitively understand that a royalty should be lower than the price of the product. Since the $100 royalty that we previously hypothesized is substantially lower than the $1,000 sales price of the LCD TV, the result is coherent. However, what was previously a coherent result becomes incoherent when the jury is asked to calculate what the chip supplier owes.

If the jury applies a 10% royalty on the LCD TV and finds that both the LCD TV manufacturer and chip supplier were equally at fault, each party would be responsible for half the award—a 5% royalty.[95] This would result in the patentee collecting $100 per unit with each defendant being liable for $50 per unit. However, the sales price of the chip was only $30. The $100 award and the $30 chip sales price suggest an incoherent result. In other words, the chip supplier would be paying more than it received for the entire chip. To obtain some form of basic coherence, the damages award against the chip supplier would have to be less than the sales price of the chip. The award would have to be less than $60 per unit with each defendant owing less than $30 per unit.

For an award to be truly coherent, the jury would have to make sure that the chip supplier paid some meaningful amount less than the sales price of the chip.[96] One reasonable way to obtain this result would be to

95. For the purposes of this hypothetical, I assume that juries will find that component suppliers and the multi-component manufacturers are each 50% responsible. However as discussed later, the parties will undoubtedly fashion arguments that will lay greater responsibility at each other's feet. *See infra* note 156 and accompanying text.

96. *See* Brian J. Love, *The Misuse of Reasonable Royalty Damages as a Patent Infringement Deterrent*, 74 MO. L. REV. 909, 921 (2009) (arguing that reasonable royalties should be less than the "expected profits" of an infringer).

calculate damages using the chip's sales as a royalty base. Under that scenario, if the jury awarded a 10% royalty based on the price of the chip, the LCD TV manufacturer and chip supplier each would be liable only for $3.00 per unit royalty or $1.50 per unit. Even if a 20% royalty were used, the defendants would owe only $3.00 per unit each, or $600,000 for both defendants. This is substantially lower than the amount $13,000,000 for one defendant suggested by our analysis without contribution.[97]

Like apportionment, contribution should lower reasonable royalty awards for component patent cases. However, contribution uses a fundamentally different mechanism than apportionment. It does not simply "allow" juries to consider apportionment principles like the current system of permissive apportionment, nor does it attempt to force courts to apply apportionment as suggested by mandatory apportionment proposals. Rather, contribution takes advantage of our natural tendency to make coherent valuations. By requiring the jury to determine the component supplier's liability, contribution places an important reference point prominently before the jury, namely the price of the component. Thus, contribution elevates the significance of the component price in a way that permissive apportionment does not. Once juries appreciate that information, they will likely use it to frame their determination. The result in component patent cases should be lower awards that are actually based on the value of the component instead of the larger multi-component product.

C. Contribution and Fairness

Contribution also provides a second independent benefit, which is the same benefit it provides in so many other areas of the law: preventing the disparate treatment of similarly situated parties. For example, most states have recognized some form of contribution among joint tortfeasors.[98] Congress has explicitly provided for contribution in a

97. This author does not mean to suggest that the numbers used in this article accurately reflect the real world effect of contribution theory. However, this thought experiment does suggest that contribution theory will meaningfully reduce royalty awards for component patents. The actual amount is still to be determined.

98. RESTATEMENT (THIRD) OF TORTS § 23 cmt. a (1999).

number of federal contexts like CERCLA actions,[99] some types of securities cases,[100] and tax actions.[101] The federal courts have also recognized the right of contribution in the context of admiralty law and private rights of action under Rule 10b-5 of the Securities and Exchange Act of 1934.[102] Even when the Supreme Court said it did not have the authority to adopt contribution theory in the context of antitrust law,[103] a congressionally-created commission later recommended adopting contribution by statute.[104]

In the context of patent law, contribution will spread liability among the different parties responsible for infringement. A manufacturer should not bear the full financial responsibility for infringement when the heart of the invention is found in a component that the manufacturer purchases and incorporates into its product. To the extent that infringers are culpable, that culpability often lies just as much with component suppliers.

Take the case of *Quanta Computer v. LG Electronics*.[105] Quanta made personal computers by adding memory and buses to Intel microprocessors and chipsets.[106] Quanta followed Intel's specifications to incorporate the parts needed to build personal computers and did not modify the Intel components.[107] Yet, Quanta was sued for patent infringement based on patents that ostensibly covered the operation of the Intel parts.[108] Intel should bear some responsibility for infringement when Intel's components were the focus of the claims. Indeed, Intel and the patentee (LG Electronics) both appeared to recognize this when they

99. 42 U.S.C. § 9613(f)(1) (2006).

100. 15 U.S.C. §§ 78i(e), 78u-4(f)(4)(C) (West 2010). Subsection 4(f)(4)(C) announces the applicability of contribution, while 4(f)(5) outlines the types of parties that can be reached through the theory.

101. 26 U.S.C. § 6672(d) (2006).

102. *See infra* text accompanying notes 133–34, 140–43 for a discussion of the Court's authority to recognize a right of contribution in these contexts.

103. See infra text accompanying note 138.

104. ANTITRUST MODERNIZATION COMMISSION, REPORT AND RECOMMENDATIONS 18 (2007), *available at* http://govinfo.library.unt.edu/amc/report_recommendation/toc.htm.

105. Quanta Computer, Inc. v. LG Elecs., Inc., 553 U.S. 617, 621–24 (2008).

106. *Id.* at 624.

107. *Id.*

108. *Id.* at 621–23.

entered into an earlier license agreement.[109]

The facts in *HTC v. Technology Properties*[110] also illustrate why patentees should not be able to focus solely on the end-product manufacturer. In *HTC*, the defendant argued that it did not understand the internal operation of the components it bought.[111] Over the plaintiff's objections, the court allowed the defendant to show its supplier the patentee's infringement contentions.

To the extent that any party is culpable, it is the party that knowingly caused the accused technology to be included in the product. Thus, even if contribution does not change jury behavior in the manner discussed above, fairness provides an independent justification for adopting contribution in patent law.

Critics will undoubtedly argue that contribution is not needed in patent law because of the existence of indemnification agreements. The possibility of an indemnification agreement distinguishes patent law from many other areas of the law that have adopted contribution. For example, in tort law two individuals responsible for a single car accident often have no relationship. Thus, the parties could not have negotiated an earlier indemnification agreement. Conversely, in patent law those seeking contribution will typically have a commercial relationship.[112] Therefore, one could argue that the efficient solution is to allow parties to use indemnification agreements to determine the relative risk each party bears.[113]

As a threshold matter, it is important to note that contribution does not prevent contracting parties from negotiating an indemnification agreement that would govern later patent infringement actions.

109. *Id.* at 623.

110. *See* HTC Corp. v. Tech. Properties Ltd., No. C08-00882, 2009 WL 1392513 (N.D. Cal. May 14, 2009).

111. *Id.* at *1.

112. This is not always the case because certain components pass through intermediate companies that simply incorporate the original component in larger component.

113. Indemnification provisions can arise out of an express agreement or they can be implied. The Uniform Commercial Code provides for a default implied warranty against infringement that applies to the sale of goods. "Unless otherwise agreed a seller who is a merchant regularly dealing in goods of the kind warrants that the goods shall be delivered free of the *rightful claim of any third person by way of infringement* or the like but a buyer who furnishes specifications to the seller must hold the seller harmless against any such claim which arises out of compliance with the specifications." U.C.C. § 2-312(2) (2001) (emphasis added).

According to the Restatement of the Law (Third) of Torts, when indemnification is provided, contribution does not apply.[114] Nonetheless, contribution is still significant because it provides a different set of default rules. Under the current system, the patentee selects the defendant and thereby chooses which joint tortfeasor is liable for the infringement. As described earlier, the patentee typically selects the multi-component product manufacturer to maximize its potential damages recovery. Of course the product manufacturer and its supplier could have negotiated an indemnification agreement. But if they did not do so, the patentee's selection identifies the party that is liable. In other words, under the current default rule the patentee gets to choose who is liable. In contrast, if contribution were adopted, the patentee's selection would not have the same effect. Parties that jointly caused infringement would share damages liability based on their relative responsibility. Again, the manufacturer and its supplier could contract out of these default rules through an indemnification agreement. However, as explained below, this may be a mistake on behalf of *both* parties.

Although indemnification agreements often equitably spread liability among different parties, they do not obviate the need for contribution in patent law for three reasons. First, indemnification agreements will not serve to lower total royalty awards in patent cases. Typically, when a product manufacturer has a right of indemnification, it does not implead the component supplier providing indemnification. So long as there is no dispute over the terms of indemnification, the component supplier simply operates behind the scenes. The component supplier may control the defense and pay any eventual award, but it does not actually appear in the lawsuit. A jury will not have to consider the component supplier and the price of the component in the same way it would if contribution were at issue. In other words, indemnification does not serve to reframe the jury's royalty calculation in the way that contribution will. In contrast, by lowering the total damages award, contribution should benefit both the multi-component product manufacturer seeking

114. *See* RESTATEMENT (THIRD) OF TORTS § 23(c) (1999) ("A person who has a right of indemnity against another person under § 22 does not have a right of contribution against that person and is not subject to liability for contribution to that person."). However, the Restatement goes on to note that "[a] person may seek both indemnity and contribution as alternative theories of recovery . . . ." *Id*. at § 23 cmt. d.

contribution and the component supplier that is compelled to provide contribution. Thus, it may be in both parties' interest not to enter into an indemnification agreement and to allow contribution to govern their relationship.

Second, indemnification only exists when there is privity between the parties. Such privity does not always exist. For example, if a computer manufacturer is sued for the way a chip in its disk drive operates, the manufacturer may wish to seek contribution from both the disk drive supplier and the disk drive's supplier who provided the controller chip. Since the computer manufacturer did not contract with the controller chip supplier, it is unlikely to have an indemnification agreement with the supplier.

Third, indemnification agreements are often an ineffective way of shifting the liability because the existence of indemnification often turns upon the relative bargaining power of the parties and not their relative responsibility for the end product. The facts of *Quanta Computer v. LG Electronics* illustrate how a component supplier with a strong bargaining position can refuse to provide terms that protect its customers from liability caused by the supplier's component.[115] Intel is the dominant supplier of microprocessors for personal computers.[116] Intel took a license to LG Electronics' patent portfolio. The agreement permitted Intel to "make, use, sell (directly or indirectly), offer to sell, import, or otherwise dispose of" Intel microprocessors and chipsets that practiced the LG Electronics patents; however, the agreement granted no license to Intel's customers to use its products in combination with other components.[117] Intel sold its microprocessors and chipsets to a number of computer manufacturers including Quanta. The manufacturers combined Intel's products with other basic components (e.g.,memory and buses) to make their computers. Since the LG Electronics-Intel license did not cover Intel's customers, LG Electronics sued a number of these computer manufacturers (including Quanta Computer) for patent infringement.

115. Quanta Computer, Inc. v. LG Elecs., Inc., 553 U.S. 617, 621–24 (2008).

116. *See* FTC, Intel Corp.; Analysis of Proposed Consent Order to Aid Public Comment, 74 Fed. Reg. 153, 48338–48346 (Aug. 10, 2010), *available at* http://www.ftc.gov/os/adjpro/d9341/index.shtm. (concerning FTC's investigation of Intel).

117. *Quanta Computer*, 553 U.S. at 623.

Although the *Quanta Computer* decision does not explicitly discuss indemnification, it is clear that Intel's customer agreements did not provide indemnification. In fact, Intel did the opposite by informing its customers that they could be liable for using Intel's products in combination with other components, even though Intel had a license covering those microprocessors and chipsets,[118] despite there being no other use for the Intel products.[119] In the end, the Supreme Court found that the computer manufacturers were not liable because LG Electronics' patent rights had been exhausted when Intel first sold LG's products under a valid license.[120] Nonetheless, the facts of *Quanta Computer* illustrate how naive it would be to expect companies with market power like Intel to offer indemnification provisions simply because the components they supply may be responsible for patent infringement.[121]

Of course, contribution does not bar companies with market power from reallocating the risk of infringement by agreement, but by changing the default assignment of liability, contribution makes the negotiation far more difficult for the supplier. Under the current landscape, a supplier with market power can simply refuse to indemnify its customer. Essentially, the supplier is saying, "When you buy my component, I will not indemnify you for your infringement even though I played a role in it." However, if contribution were adopted, the supplier would actually have to demand that its customer indemnify the supplier. In other words, the supplier would have to say, "When you buy my component, you need to indemnify me for my infringement." Presumably, this different dynamic will make it more difficult for even dominant suppliers to avoid liability for infringement they cause. In sum, the possibility of indemnification agreements does not eliminate the need for contribution in patent law.

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118. A separate Master Agreement with LG Electronics required Intel to notify its customers that Intel has a license to the LG Electronic patents, but that customers did not have a license. *Id*. at 623–24.

119. *Id.* at 632 ("LGE has suggested no reasonable use for the Intel Products other than incorporating them into computer systems that practice the LGE patents.").

120. *Id.* at 638.

121. *But see* F. Scott Kieff, Quanta v. LG Electronics*: Frustrating Patent Deals by Taking Contracting Options off the Table*, 2008 CATO SUP. CT. REV. 315 (arguing that parties should have the freedom to make what appear to be unfair deals).

V. REFORM FROM THE COURTS

A. Conflating Contribution with Contributory Infringement

So far district courts have uniformly rejected applying contribution in patent cases because of an unfortunate misunderstanding. In *Motorola v. Varo*,[122] the Northern District of Texas first addressed whether a defendant in a patent action "may have a claim for contribution from [the third party defendants] as joint tortfeasors."[123] The court sought to determine whether such an action could be implied from the patent laws or as a part of federal common law. The decision dismissed both possibilities because of the doctrine of contributory infringement set forth in 35 U.S.C. § 271(c). The court reasoned that "Congress, having defined contributory infringement by statute, could not have intended the courts to imply some other definition and allow a cause of action upon it."[124] In other words, the *Motorola* court viewed the theory of contribution and patent law's contributory infringement as variations of the same theory. The few district courts that have addressed the issue since *Motorola* have followed both its analysis and holding.[125]

Although the two doctrines share a common root word, contributory liability under 35 U.S.C. § 271(c) is a distinct doctrine from tort law's theory of contribution. Contributory liability in patent law can be thought of as a type of accessory liability.[126] Under patent law, direct infringers are those that make, use, sell, offer to sell, or import the entire

122. Motorola, Inc. v. Varo, Inc., 656 F. Supp. 716, 717–718 (N.D. Tex. 1986).

123. *Id.* at 717.

124. *Id*. at 718.

125. *See* Chemtron, Inc. v. Aqua Prods., Inc., 830 F. Supp. 314, 316 (E.D. Va. 1993) ("There is no claim for contribution under the U.S. patent laws, and none may arise under state law as it is preempted by federal law."); *see also* Constr. Tech., Inc., v. Lockformer Co., Inc., 781 F. Supp. 195, 201 (S.D.N.Y. 1990) ("[T]he Court agrees with [*Motorola*] that there is no right of contribution in patent cases."); *see also* McNeilab, Inc. v. Scandipharm, Inc., No. Civ. A. 92-7403, 1993 WL 212424 (E.D. Pa. June 16, 1993) (quoting both *Motorola* and *Construction Technology* for the proposition that the existence of a statute regarding contributory infringement forecloses the application of contribution in patent law).

126. *See* Bernard Chao, *Breaking* Aro*'s Commandment: Recognizing that Inventions have Heart*, 20 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 1183, 1194 (2010) ("Contributory infringement assumes that a party did not make, use, or sell the entire patented invention. Nonetheless, the statute imposes liability for a party that contributes to another's act of direct infringement.").

patented invention.[127] However, even when a party is not a direct infringer, it can be found indirectly liable for aiding and abetting others to directly infringe. Contributory infringement and inducement are the two types of aid that lead to indirect liability.[128] Just as tort law's accessory liability requires another party's tortious behavior, both theories are predicated on finding that another party is directly infringing a patent.[129] The specific statutory language governing contributory infringement states:

> Whoever offers to sell or sells within the United States or imports into the United States a component of a patented machine, manufacture, combination, or composition, or a material or apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use, shall be liable as a contributory infringer.[130]

Under this statute, parties that do not make or sell an entire patented invention may be liable for contributory infringement if they provide a material part of the patented invention. Thus, the theory of contributory infringement helps establish which parties are liable for patent infringement and which are not.

In contrast, tort law's theory of contribution says nothing about who is liable. The theory assumes the law has already identified the responsible parties. Once the liable or potentially liable parties of interest are identified, contribution provides a mechanism to apportion any damages between those parties. To date, district courts have failed to appreciate this distinction, and their decisions rely on improperly conflating the two doctrines.

B. Federal Court Authority

Although the district courts have analyzed the law incorrectly, this

127. 35 U.S.C.A. § 271(a) (West 2010).

128. *Id.* at §§ 271(b), (c) (describing inducement and contributory infringement respectively).

129. C. R. Bard, Inc. v. Advanced Cardiovascular Sys., Inc., 911 F.2d 670, 673 (Fed. Cir. 1990).

130. 35 U.S.C.A. § 271(c) (West 2010).

does not mean that the courts are empowered to adopt contribution in patent law. Determining whether the courts have the authority to recognize a new remedy in the context of federal law is a complex question. The Supreme Court has said that the courts do not have the power to adopt contribution in antitrust law,[131] the Equal Pay Act, or Title VII.[132] However, the Court has said that they do have the power in admiralty law[133] and under Rule 10b-5 of the Securities and Exchange Act.[134] To explain the differing outcomes, the Supreme Court has identified three relevant categories of federal law.

In certain areas of law, "the federal courts have had historic, well-recognized responsibility for the elaboration of legal doctrine."[135] Thus, in *Coopers Stevedoring v. Fritz Kopke*, the Supreme Court found that the courts had the authority to adopt contribution in admiralty law.[136]

In other areas of law, such as antitrust law, Equal Pay, and Title VII, the law is "defined by statutory provisions that were express in creating the substantive damages liability for which contribution was sought."[137] In these areas, the Supreme Court asked whether Congress "expressly or by clear implication" envisioned a contribution right to accompany the substantive damages right created.[138] If there was no such implication, the Court then asked whether Congress "intended courts to have the power to alter or supplement the remedies enacted."[139] In *Texas Industries v. Radcliff Materials*, the Supreme Court answered those questions in the negative and found that the courts are not empowered to adopt contribution in antitrust law.[140] The Court used the same analysis to arrive at the same result with respect to the Equal Pay Act and Title VII in *Northwest Airlines v. Transport Workers*.[141]

131. Texas Indus., Inc. v. Radcliff Materials, Inc., 451 U.S. 630 (1981).

132. Nw. Airlines, Inc. v. Transp. Workers Union of Am., 451 U.S. 77, 86–87 (1981).

133. Coopers Stevedoring Co. Inc. v. Fritz Kopke, Inc., 417 U.S. 106 (1974).

134. Musick, Peeler & Garrett v. Emp'rs Ins. of Wausau, 508 U.S. 286 (1993).

135. *Id.* at 290.

136. *Coopers Stevedoring*, 417 U.S at 111–115.

137. *Musick*, 508 U.S. at 291.

138. *Id.* (citing Texas Indus., Inc. v. Radcliff Materials, Inc., 451 U.S. 630, 638 (1981)).

139. *Id.* (citing *Texas Indus.*, 451 U.S. at 645 and Nw. Airlines, Inc. v. Transp. Workers Union of Am., 451 U.S. 77, 91, 97 (1981)).

140. Texas Indus., Inc. v. Radcliff Materials, Inc., 451 U.S. 630, 646 (1981).

141. Nw. Airlines, Inc. v. Transp. Workers Union of Am., 451 U.S. 77, 97 (1981) ("But the

Finally, the Supreme Court identified a third category of federal law in *Musick, Peeler & Garrett v. Employers Ins. of Wassau*.[142] Even though a statutory scheme (the Securities and Exchange Act of 1934) governed securities law, the decision focused on what role the courts have had in fashioning the specific remedy. The private right of action under 10b-5 was implied by the judiciary on the theory "that courts should recognize private remedies to supplement federal statutory duties, not on the theory Congress had given an unequivocal direction to the court to so."[143] Thus, the Supreme Court acknowledged that there was no reason to ask what Congress intended or implied with regard to contribution. The question of contribution was ancillary to the private cause of action courts had already provided. Having established that the courts' role was "to continue elaboration of the scope of the 10b-5 right,"[144] the Supreme Court went on to find a right of contribution in 10-b5 actions.[145]

Thus, there appears to be three possible avenues for adopting contribution in a particular substantive area of federal law: (1) showing that the courts have historically elaborated a general common law for that particular subject area; (2) finding a statute that implies contribution; and (3) showing that contribution is ancillary to those portions of the law that the courts have already developed.[146]

District courts have already found that parties suing under the patent statutes cannot take advantage of the second theory because the statutes do not imply an action for contribution.[147] Although those findings are correct insofar as they go, those courts overlooked the other sources of possible judicial authority. Namely, they have failed to consider the

authority to construe a statute is fundamentally different from the authority to fashion a new rule or to provide a new remedy which Congress has decided not to adopt.").

142. Musick, Peeler & Garrett v. Emp'rs Ins. of Wausau, 508 U.S. 286, 291 (1993). In 1995, Congress enacted a statute that explicitly recognized the right of contribution. *See supra* note 100.

143. *Musick*, 508 U.S. at 291 (citations omitted).

144. *Id*. at 292.

145. *Id*. at 298.

146. There is also an argument that whether contribution applies to federal law is actually governed by state law. *See* RICHARD H. FALLON, JR., DANIEL J. MELTZER AND DAVID L. SHAPIRO, HART AND WESCHLER'S, THE FEDERAL COURTS AND THE FEDERAL SYSTEM 714 (6th ed. 2009). Of course this would lead to the risk of inconsistent results and choice of law issues.

147. *See* Hricik, *supra* note 1 (stating that the patent statutes do not imply a right to contribution).

third category outlined above—whether the theory of contribution is ancillary to an area of patent law that has previously been developed by the courts. Had they looked at that issue, they would have realized that joint and several liability in patent law can serve as the basis for courts' authority.

As early as 1884, in *Birdsell v. Shaliol*, the Supreme Court labeled different infringers as joint tortfeasors.[148] Soon thereafter, courts compared patent infringers to trespassers and held that they were jointly and severally liable.[149] These decisions are not simply historical artifacts. In 2001, the Federal Circuit classified the importers and resellers of an infringing device as joint tortfeasors and found that they were jointly and severally liable.[150] Similarly, in the case of an infringing multi-component product, a patentee may receive a full satisfaction from either the multi-component product manufacturer or component supplier.[151] Moreover, there are no patent statutes that discuss whether infringers are jointly and severally liable.

The right to contribution flows directly from the issue of joint and several liability. Contribution says that when two or more persons are jointly and severally liable for the same injury and one of them has paid more than his fair share of the common liability, that party may recover contribution from the other responsible parties. Since the federal courts have established that infringers are jointly and severally liable through patent common law, under the Supreme Court's reasoning in *Musick, Peeler*, the courts also have the power to adopt the ancillary remedy of contribution.

Consequently, contribution can sidestep the obstacles that prevented

148. Birdsell v. Shaliol, 112 U.S. 485, 489 (1884) (finding an earlier judgment against one infringer without a full satisfaction did not bar a second suit against the second infringer).

149. Thomson-Houston Elec. Co. v. Ohio Brass Co., 80 F. 712, 721 (6th Cir. 1897) ("From the earliest times, all who take part in a trespass, either by actual participation therein or by aiding and abetting it, have been held to be jointly and severally liable for the injury inflicted."); Dowagiac Mfg. Co. v. Deere & Webber Co., 284 F. 331, 337 (8th Cir. 1922) (classifying the seller and manufacturer of infringing grain drills as joint tort-feasors and saying that they were jointly and severally liable); Sherman, Clay & Co. v. Searchlight Horn Co., 225 F. 497, 500 (9th Cir. 1915) ("There may be as many causes of action as there are joint tort-feasors, and as many recoveries, but there can only be one satisfaction.").

150. Shockley v. Arcan, Inc., 248 F.3d 1349, 1364 (Fed. Cir. 2001); Semiconductor Energy Lab. Co. Ltd. v. Chi Mei Optoelectronics Corp., 531 F. Supp. 2d 1084, 1115–16 (N.D. Cal 2007).

151. *Shockley*, 248 F.3d at 1364.

mandatory apportionment from ever being adopted. Contribution does not need Congressional approval; the courts can implement it now. What's more, contribution will primarily apply to the technology industry, in which different companies are frequently responsible for the numerous components that go into modern-day computers and electronics. Contribution will not apply to the pharmaceutical industry because usually only one party is responsible for a drug. Thus, the contribution solution navigates around the political realities of the technology-pharmaceutical stalemate and Congressional inertia to offer substantive damages reform targeted at a specific industry that has suffered from overinflated damage awards.

C. Application of Contribution In Patent Law

Of course, patent law is quite different than tort law, and the application of contribution to patent law will need to take into account these differences. Contribution arises when two or more persons are responsible for the same harm. Thus, it is important to define what the *same* harm is. In patent law the harm is infringement.

Fortunately, two existing patent doctrines can help determine when parties are responsible for the same infringement: indirect infringement under §§ 271(b) and (c) and the first sale or exhaustion doctrine. As discussed earlier, §§ 271(b) and (c) define two types of indirect infringement: inducement and contributory infringement. The statute places liability on those who either direct others to infringe (inducement) or help them infringe by supplying parts that are especially suited to infringe (contributory infringement). Both types of indirect infringement require that another party directly infringe upon a patent. It follows that an indirect infringer and its corresponding direct infringer cause the same infringement (i.e., harm). For the purposes of contribution theory, that means (1) a semiconductor component supplier that contributes to the infringement of a downstream computer manufacturer and (2) the manufacturer itself cause the same harm. Consequently, these two parties would have the right of contribution against one another.

In some cases, the component supplier will not be a contributory infringer, but a direct infringer. In that case, the theory of exhaustion

can help us determine when two parties are responsible for the same harm. Patent exhaustion limits the patent rights that survive the initial authorized sale of a patented item.[152] In our recurring hypothetical, once a patentee recovers from a component supplier, it would be unable to obtain a second recovery from the downstream multi-component product manufacturer because it had exhausted its rights. One can think of exhaustion as prohibiting two recoveries for the same harm. Thus, if exhaustion would apply to the sale of a component and protect the downstream manufacturer, there should also be a right of contribution between those two parties.

VI. NEXT STEPS

This article outlines the case for contribution in patent law, but it is only the first step in a much larger conversation. First, I acknowledge that I am only theorizing about the impact of contribution on juries. Further study needs to be done on actual jury behavior. Moreover, by changing the patent landscape in such a fundamental way, contribution will create ripple effects in other patent doctrines as well as the way companies behave. In this Part of the article, I attempt to identify, but not resolve, some of these issues.

A. Future Studies

I have only theorized why overcompensation occurs in component patent cases. Although well-established concepts from behavioral economics support this theory, it is not certain that those concepts translate to the patent damages context. Some studies relating to punitive damages and non-economic injuries in tort cases demonstrate anchoring effects in juries.[153] However, none of the studies on anchoring effects were performed on patent infringement cases. Moreover, the concept of coherence has been studied even less in the legal context. No studies have been conducted to show the general coherence of jury valuations, let alone patent jury awards. Thus, there is

152. Quanta Computer, Inc. v. LG Electronics, Inc., 553 U.S. 617, 621 (2008).

153. *See supra* notes 81–84.

no proof that patent juries will give as much weight to the value of the component as suggested.

Additionally, calculating damages is certainly more complex than discussed in the model presented here.[154] Even if contribution causes juries to be more cognizant of the component price in their calculations, it is unclear whether this effect will be sufficient to actually lower royalty awards. This problem cries out for future empirical work to test whether contribution will lower total royalty awards in component cases.[155]

B. Changing Behavior

Contribution will also likely change parties' tactics in some unpredictable ways. Patentees will have to decide whether to revise their damages demand. If not, will they raise new arguments to justify their demand in view of the component price? Will patentees seek 50% from each party, or will they seek more from the infringer who sold the more expensive product (e.g., the LCD TV manufacturer)? How will the defendants ask the jury to assign their relative responsibilities?[156] For example, could a manufacturer persuade a jury that its supplier bore greater responsibility because the supplier was the one who included the patented technology in its component? Alternatively, could the supplier successfully argue that it should bear less responsibility because it was only liable for contributory infringement and was not a direct infringer like the multi-component manufacturer? If so, would juries assign less responsibility to those defendants that are designated contributory, rather than direct, infringers? These tactics could affect both how juries apportion liability, and the size of the total award they issue.

The theory of contribution is not a one-way street. This article has discussed how manufacturers could implead their component suppliers and ask for contribution. Sometimes, the component manufacturer will be the accused infringers. For example, the patent holder may also be a

154. Georgia-Pacific Corp. v. U.S. Plywood Corp., 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970); *see supra* note 39 (listing the *Georgia Pacific* factors).

155. The author has received a small grant to begin studying how patent juries may react to contribution theory.

156. *See* RESTATEMENT (THIRD) OF TORTS § 23 cmt. e (1999).

component supplier. In this situation, the patentee often will choose to sue its competitor, another component supplier, and not the multi-component product manufacturer who is often the patentee's customer or potential customer too. An accused component supplier could implead the manufacturer and ask for contribution. It is not clear how often this will actually occur. After all, there is strong incentive for component suppliers not to draw their customers into a lawsuit. Nonetheless, this result could also change royalty awards in unforeseen ways.

C. Indemnification

As discussed earlier, contribution does not apply if the parties already negotiated an indemnification provision governing infringement.[157] It is unclear how this rule will apply to the various types of indemnification provisions that exist today. For example, some suppliers agree to provide indemnification so long as their components are not used in combination with other products.[158] Other agreements place monetary caps on indemnification rights. It would appear that contribution rights should apply only to those situations where there are no indemnification rights (even if there are indemnification rights for other situations). For all practical purposes, that situation is akin to having no indemnification rights at all. However, contribution should not apply when there are caps to avoid upsetting the relative share of the responsibility the parties negotiated.

If contribution were adopted in patent law, parties may also adopt new negotiating strategies. Suppliers may start offering token indemnification agreements to preempt contribution rights. This may require patent law to revise the relationship between indemnification and contribution. Patent law could reject the view of the Restatement (Third) of Torts and allow a party to select between contribution and indemnification. Alternatively, the law could simply provide a mechanism to warn less sophisticated parties of the effect of such

157. *See* RESTATEMENT (THIRD) OF THE LAW OF TORTS § 23(c) (1999).

158. Intel provided a variation of this provision by purchasing a license that only extended to the use of Intel's products by themselves. Quanta Computer, Inc. v. LG Electronics, Inc., 553 U.S. 617, 623–24 (2008).

clauses. For example, before an indemnification clause could limit a right to contribution, patent law could require the agreement to specifically disclose that result. Finally, as suggested earlier, parties may intentionally forego an indemnification agreement in hope of reducing total damages awards and thus benefit both the component supplier and its product manufacturer.

D. Extraterritoriality

The theory of contribution also has significant extraterritorial implications. Component suppliers can be found both inside the United States and abroad, particularly in Asia, but categorizing suppliers as either domestic or foreign oversimplifies the issue. Many domestic companies design components in the United States, but manufacture them abroad. [159] Similarly, many foreign companies have a significant U.S. presence.[160] Thus, this article uses the term "foreign supplier" to refer to those suppliers that physically supply their components abroad. Under this definition, many U.S companies may actually be foreign suppliers. For the purposes of contribution theory, it will be important to understand whether a foreign supplier could be found liable under any infringement theory when their component ends up in a product that infringes a patent in the United States.

Historically, the extraterritorial reach of U.S. patent laws has been quite limited. Courts have found liability only for direct infringement when someone "makes, uses, offers to sell, or sells any patented invention, *within the United States*, or imports *into the United States* any patented invention . . . ."[161] In 1984, Congress amended the patent statutes to encompass acts in the United States that aid infringement of a

159. For example, Silicon Image makes processors that help devices like televisions to communicate using the HDMI standard. Although it is headquartered in Sunnyvale, California, Silicon Image also has a research and center development center in Shanghai China. *See Company Milestones*, SILICON IMAGE, http://www.siliconimage.com/aboutus/index.aspx?Page=11&Section=2 (last visited Jan. 12, 2012).

160. For example, in Crystal Semiconductor Corp. v. TriTech Microelectronics Int'l, Inc., 246 F.3d 1336, 1344 (Fed. Cir. 2001), TriTech manufactured audio CODEC chips in Singapore but also had facilities in California. TriTech sold some of these chips to OPTi which in turn sold these chips to the U.S. personal computer market.

161. 35 U.S.C.A. § 271(a) (West 2010) (emphasis added).

U.S. patent abroad. Specifically, 35 U.S.C. § 271(f) imposes liability for acts of inducement and contributory infringement within the United States even though the act of direct infringement takes places abroad.[162] In contrast, there is no provision in the patent statutes that explicitly addresses whether companies can be liable for making and selling components abroad when the later act of direct infringement takes place in the United States. Section 271(c), which governs contributory infringement, is the logical place to find such a prohibition. But that statute explicitly requires that the acts constituting contributory infringement take place in the United States.[163]

Under the current statutory framework, foreign suppliers may still be held liable. For example, a manufacturer that is accused of infringement in the United States may still be able to seek contribution from its foreign suppliers under a theory of inducement. To establish liability for inducement under § 271(b), the accused defendant must have known of the patent, and actively and knowingly aided and abetted another's direct infringement.[164] Unlike direct infringement and contributory infringement, inducement is not limited to activities that take place in the United States.[165]

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162. *Id*. at § 271(f) ("(1) Whoever without authority supplies or causes to be supplied in or from the United States all or a substantial portion of the components of a patented invention, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer. (2) Whoever without authority supplies or causes to be supplied in or from the United States any component of a patented invention that is especially made or especially adapted for use in the invention and not a staple article or commodity of commerce suitable for substantial noninfringing use, where such component is uncombined in whole or in part, knowing that such component is so made or adapted and intending that such component will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.").

163. Section 271(c) states that "[w]hoever offers to sell or sells *within the United States* or imports *into the United States* a component of a patented machine, manufacture, combination, or composition . . . shall be liable as a contributory infringer." 35 U.S.C.A. § 271(c) (West 2010); *see also* MEMC Elec. Materials, Inc. v. Mitsubishi Materials Silicon Corp., No. C 01-4925 SBA, 2006 WL 463525, at *7 (N.D. Cal. Feb. 24, 2006) (noting that contributory infringement requires a sale within the United States).

164. DSU Med. Corp. v. JMS Co., Ltd., 471 F.3d 1293, 1305 (Fed. Cir. 2006) (*en banc*).

165. 35 U.S.C.A. § 271(b) (West 2010) ("Whoever actively induces infringement of a patent shall be liable as an infringer."); *see also DSU Med*., 471 F.3d at 1305 ("Unlike direct infringement, which must take place within the United States, induced infringement does not require any activity by the indirect infringer in this country, as long as the direct infringement occurs here.").

In fact, the Southern District of New York has already found that "the production and sale of an infringing product knowing that the buyer will sell the product in the United States fit comfortably within this expanded definition of inducement as 'encouragement' or 'aiding and abetting.'"[166] The Eastern District of Texas appears to agree.[167] Although these decisions analyzed the production and sale of an entire infringing product (i.e., acts that would constitute direct infringement if performed within the United States), the same reasoning should apply to foreign suppliers so long as the component being supplied is a material part of the patented invention (i.e., acts that would constitute contributory infringement if performed within the United States).[168] Thus, the act of supplying a component abroad could trigger liability in the United States. In addition, foreign suppliers often provide technical support to their customers' design teams by helping the customers incorporate the component into the end product. These acts could be also considered acts of inducement triggering liability.

Manufacturers could also attempt to hold foreign suppliers liable for offers for sale under § 271(a). Even when a foreign supplier physically transfers its component abroad, that supplier may have conducted sales activities in the United States. Sometimes foreign suppliers even have U.S.-based sales offices. This tactic appears less promising in view of the Federal Circuit's recent decision in *Transocean Offshore Deepwater Drilling v. Maersk Contractors*.[169] In *Transocean*, the Federal Circuit held that "the location of the contemplated sale controls whether there is an offer to sell within the United States." Under this somewhat odd rule, acts that appear to be an offer to sell in the United States would be

166. Wing Shing Prods. (BVI), Ltd., v. Simatelex Manufactory Co., Ltd., 479 F. Supp. 2d 388, 411 (S.D.N.Y. 2007).

167. Honeywell Int'l, Inc. v. Acer Am. Corp., 655 F. Supp. 2d 650, 660 (E.D. Tex. 2009) (stating that "liability [for foreign sales] will extend to CPT only if it actively induced infringement in the United States by purposely availing itself of U.S. markets.").

168. There is a basis in the law for applying inducement to acts that normally would be considered contributory infringement. *See* Charles W. Adams, *A Brief History of Indirect Liability for Patent Infringement*, 22 SANTA CLARA COMPUTER & HIGH TECH. L.J. 369, 386 (2006) (noting that inducement applied when there was evidence that a component with both infringing and noninfringing uses was sold with the intent that it would be used to infringe a combination patent).

169. Transocean Offshore Deepwater Drilling, Inc. v. Maersk Contractors USA, Inc., 617 F.3d 1296 (Fed. Cir. 2010).

considered to take place abroad if the actual sale were found to be abroad.[170]

However, the Federal Circuit has been inconsistent in interpreting the reach of U.S. patent laws.[171] In *Transocean*, the Federal Circuit said that acts that took place abroad constituted an offer for sale in the United States. Thus, the court was interpreting the reach of § 271(a) expansively. It is unclear whether the Federal Circuit would use the same analysis to limit the reach of § 271(a) and say that acts that take place domestically would actually constitute offers for sale abroad. If contribution theory is adopted in patent law, this issue will need to be resolved.

VII. CONCLUSION

This article has presented the multifaceted case for contribution in patent law. From a doctrinal perspective, district courts have incorrectly found that contribution is preempted by the statute governing contributory infringement, 35 U.S.C. § 271(c). However, they have arrived at this decision by wrongly conflating tort law's theory of contribution and patent law's theory of contributory infringement. But by itself, correcting this mistake does not provide the legal basis for adopting contribution. The Supreme Court has said that courts have the power to adopt contribution only in a particular area of federal substantive law when certain criteria are met. Fortunately, patent law fits squarely into one of the specified tests. The courts, not Congress, have determined that infringers are jointly and severally liable. Consequently, under *Musick*, *Peeler*, and *Garrett*, courts have the authority to determine whether the ancillary theory of contribution should also be adopted.

170. For example, a foreign semiconductor manufacturer's representatives could come to Silicon Valley to sell chips to companies who design products there. Even though the offers to sell appear to take place in the United States, *Transocean* suggests that the offer to sell might take place overseas so long as the actual sale also took place outside the United States. This is often the case because many electronic products are designed in the United States but are manufactured abroad. Consequently, components are delivered to foreign factories.

171. Timothy R. Holbrook, *Extraterritoriality in U.S. Patent Law*, 49 WM. & MARY L. REV. 2119, 2136–42 (2008) (discussing the Federal Circuit's inconsistent interpretation of the foreign reach of various patent laws).

The case for contribution does not rely on doctrinal arguments alone. There are also compelling policy reasons for courts to adopt contribution in patent law. Like it does in other areas of the law, applying contribution in patent law will equitably spread liability among different responsible parties. However, contribution will also provide a much less expected benefit unique to patent law: it will lower royalty awards in component patent cases, an area where awards have been shown to be excessive. Relying on the behavioral economics concepts of "anchoring" and "coherence," this article has compared how juries act under the current system with how they would behave under a patent system applying contribution theory. This comparison shows that contribution will lead to lower royalty awards that are based on the value of the individual components and not the larger multi-component products.

Of course this article only represents a first step. If contribution is eventually adopted in patent law, it will undoubtedly have many downstream effects. Hopefully, this will lead to a robust discussion in many different areas including jury behavior, indemnification agreements and the extraterritorial reach of U.S. patent laws.