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ECONOMICS AND KEY PATENT DAMAGES CASES

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I. AN INTRODUCTION TO PATENT DAMAGES

Patent damages are provided by statute[1] and were further defined by the U.S. Supreme Court in 1964 in *Aro Mfg. Co., Inc. v. Convertible Top Replacement Co.*[2] Both the statute and *Aro* have a sound basis in modern economic thought and are consistent with damage law in other types of actions. Unfortunately, in the next important patent damages case, *Panduit Corp. v. Stahlin Bros. Fibre Works, Inc.*,[3] the Appellate Court adopted an economic model not commonly seen in the real world. Subsequent opinions, by following *Panduit*, compounded the *Panduit* errors and created an approach to damages unlike anything found elsewhere in the law. As a result, patent damages are often calculated without regard for economic reality. Many patent owners have reaped rewards in court that are far greater than those they could ever have received in the marketplace. This creates an opportunity for abuse of the litigation process, retards innovation and imposes unnecessary costs on society.

While *Panduit* still influences damages law, important cases in the last decade have done a lot to bring awards back into line with economic reality. In *State Industries v. Mor-Flo Industries*[4] the Court of Appeals for the Federal Circuit (hereinafter "CAFC") approved a methodology that avoids

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[1] 35 U.S.C. § 284.

[2] 377 U.S. 476 (1964).

[3] 575 F.2d 1152 (6th Cir. 1978).

[4] 883 F.2d 1573, 1577-80 (Fed. Cir. 1989), *cert. denied*, 493 U.S. 1022 (1990).

many of the extreme assumptions underlying *Panduit* and has some basis in economic reality. Unfortunately, *State Industries* has its own problems with its simplistic approach to market shares and its simultaneous award of both lost profit damages and a reasonable royalty. Two subsequent cases, *BIC Leisure Products v. Windsurfing Int'l, Inc.*[5] and *Mahurkar Patent Litigation*[6], adopted a more thorough economic analysis that is closer to the meaning of *Aro*. Unfortunately, these were followed by *Rite-Hite Corp. v. Kelley Corp*[7] and *King Instruments Corp. v. Perego*,[8] that suffer severely from an internally inconsistent economic analysis. In a recent decision on patent damages, *Grain Processing Corp. v. American Maize Products Co.*,[9] the CAFC returned to sound economics and reaffirmed the fundamental "but-for" analysis of *Aro*. Hopefully, this indicates a desire to have patent damage cases based on sound economic principles.

II. PURPOSE OF COMPENSATORY DAMAGES

Compensatory damages compensate the plaintiff for economic harm caused by the defendant. The purpose of awarding compensatory damages is to discourage socially undesirable behavior and to encourage socially desirable behavior. In patent law, it is socially desirable for people to innovate, to publish the details of that innovation, and to contract among themselves for the use of intellectual property. At the same time, it is socially undesirable for people to divert resources from productive uses in order to protect their intellectual property from infringement. It is also socially undesirable for people to spend large amounts of time in court, as this is a very costly process that does not directly increase the amount of goods and services available for society's benefit.[10]

To encourage innovation, the patent system grants the owner the right to profit from an invention either by licensing the technology, by selling the product embodying the invention, by keeping others from using the invention to compete or by a combination of these. A provision allowing for damages equal to the profit that the innovator would have made absent infringement maintains the financial incentive to innovate. This assurance also discourages innovators from diverting scarce resources from productive uses to less efficient means of protecting their invention. Intellectual property

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[5] 1 F.3d 1214 (Fed. Cir. 1993).

[6] 28 U.S.P.Q. 2d BNA 1801 (N.D. Ill. 1993).

[7] 56 F.3d 1538 (Fed. Cir. 1995).

[8] 65 F. 3d 941 (Fed. Cir. 1995).

[9] 185 F.3d 1341 (Fed. Cir. 1999).

[10] Litigation and the law increase the goods and services available to a society by minimizing the costs of transacting. The current situation in Russia is a good example of how important a legal tradition is to the economic well being of a society. In this paper, the distinction between "productive" and "non-productive" activities refers to the use of the courts when there are more efficient alternatives.

can be protected by armed guards, onerous labor contracts, and "enforcers" operating outside the law but these are costly and do not increase the goods and services available for society. Likewise, intellectual property can be protected by cloaking an invention in secrecy, but this reduces society's body of collective knowledge. Protecting intellectual property by providing for compensatory damage awards under a rule of law is a less costly and more effective means of accomplishing a society's objectives. Thus, to be efficient, a damage award needs to return to the patent owner an amount at least equal to its economic harm.

However, damage awards greater than actual economic harm can lead to socially undesirable behavior. If patent owners expect to receive more damages in court than their economic harm, then they will have incentive to litigate rather than negotiate and/or mitigate. If defendants expect to pay more than the economic harm they cause, they will be more conservative in their choices and activities. This conservatism may be contrary to the social purposes of the patent system.

Patent law is somewhat unique in that there can easily be unintentional or "honest" infringement. Patents are vague and traditionally were not published immediately upon filing. A company can invest millions in developing and introducing a new product only to find that it is potentially infringing a newly issued patent. If the cost of the unknowing infringer's investment is greater than the profits the patent owner forgoes, a negotiated license based on these savings will increase social welfare. However, if the patent owner can obtain a damage award that is greater than its foregone profits, the patent owner will not negotiate in good faith. Instead, the patent owner person will head to court at the expense of the unknowing infringer and society.

Ownership can be clearly established with real property. Boundaries can be reliably marked and both the owner and the would-be trespasser can easily determine trespass. This is not true for patents. Often ownership (i.e. patent validity) and trespass (i.e. infringement) cannot be determined without a long and expensive trial. The related cost and uncertainty make it attractive for companies to enter into licenses and pay royalties even when the claims of validity and infringement are weak.

When damage awards exceed the economic harm caused,[11] there will be an increase in the number of patents of questionable validity and a corresponding increase in the attempted enforcement of these patents. As the risk of paying a high award increases, would-be innovators will increasingly enter into licenses rather than challenge claims that may be weak. Thus, resources that would have otherwise been used for innovation will be diverted into pursuing, enforcing, and paying for patents that represent little, if any, innovation.

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[11] Here and elsewhere, the term "economic harm" encompasses both lost profits and reasonable royalties.

If companies face the risk of unreasonably high patent awards, they will be reluctant to pursue innovation and products that have the possibility of infringement. Because they cannot resolve the uncertainty about infringement without an expensive trial, companies will minimize their exposure by stopping research and development in the uncertain technology. As patent awards increase relative to harm, innovation that is distinct from, but still close to, patented technology will be abandoned.[12] High damage awards can have the perverse effect of retarding innovation, thereby undermining the goals of the patent system.

It is important that compensatory damage awards in patent cases accurately measure the patent owner's economic harm, but no more than that.[13] To do this, patent awards must reflect the economic realities of the market place; the damages awarded in *Panduit* and its related cases often do not.[14]

III. DEFINITION OF PATENT DAMAGES

Thirty-five U.S.C. § 284 provides that "the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty…."[15] In summarizing and reaffirming case law, the U.S. Supreme Court in *Aro* stated:

> [Damages] have been defined by this Court as "compensation for the pecuniary loss he [the patentee] has suffered from the infringement, without regard to the question whether the defendant has gained or lost by his unlawful acts." *Coupe v. Royer*, 155 U.S. 565, 582. They have been said to constitute "the difference between his pecuniary condition after the infringement, and what his condition would have been if the infringement had not occurred." *Yale Lock Mfg. Co. v. Sargent*, 117 U.S. 536, 552. The question asked to determine damages is "how much had the Patent Holder and Licensee suffered by the infringement. And that question [is] primarily: had the Infringer not infringed, what would Patent Holder-

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[12] The CAFC has repeatedly stated that patents are published so that others may learn from and build upon the discoveries of others. In other words, innovation by incremental improvements in technology is encouraged. In a regime of high damage awards, this will not happen.

[13] Another situation giving rise to the need to avoid excessive awards is when the parties have different assessments of their positions. Excessive awards will cause patent owners to be less critical of their positions and possible infringers to discount their own positions. This will result in excessive licenses and royalty payments. This problem exists in other types of litigation as well but the vagueness of validity and infringement compound it for patent law.

[14] Punitive damages, which are provided for under patent law, are a separate matter. For the most part, they compensate for the fact that wrong-doing is not always detected and punished, and that there are some behaviors that harm society in ways that are not captured by the plaintiff's economic loss. *See Punitive Damages*, A. MITCHELL POLINSKY AND STEVEN SHAVELL, 3 THE NEW PALGRAVE DICTIONARY OF ECONOMICS AND THE LAW 192 (Peter Newman ed., 1998).

[15] 35 U.S.C. § 284.

> Licensee have made?" *Livesay Window Co. v. Livesay Industries, Inc.*, 251 F.2d 469, 471 (5th Cir. 1958).[16]

This wording is similar to that commonly found in other areas of the law, most notably, in the area of antitrust damages where a great deal of effort is spent determining what would have happened but for the unlawful act. If followed, it would place the patentee in the same economic position he or she would have been in had the infringement not occurred. In this sense, the patentee would be made whole for the infringer's transgression. Furthermore, under *Aro* the patentee would be indifferent to the infringement,[17] so the incentive to innovate is maintained. Likewise, by limiting the damages to the actual economic harm, *Aro* provides no incentive for the patentee to litigate rather than negotiate. Therefore, damages obtained under *Aro* will likely maximize innovation while minimizing litigation and other transaction costs.[18]

Panduit lists four factors that a patent owner must prove to receive patent damages.[19] These are:

1. Demand for the patented product.
2. Absence of acceptable non-infringing substitutes.
3. Manufacturing and marketing capability to exploit the demand.
4. Expected profits.

The absence of acceptable substitutes is what makes *Panduit* a unique and somewhat extreme case. It is not common in the real world for a product to have no substitutes. If all products were ranked according to the number of substitute products, the finding in *Panduit* would be at the far end of the ranking, *i.e.* no substitutes, with the vast majority of products elsewhere along the scale.

Alone, this would not have been a problem if *Panduit's* place on the scale had been recognized. However, the problem arose because there was no other precedent for recovering lost profit damages and most plaintiff's after *Panduit* argued that there were also no substitutes for their products. The Courts frequently agreed, therefore *Panduit* and subsequent cases forced common situations into the less common economic model of no substitutes. The result was a series of unpredictable decisions that at times were at odds with economic reality.

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[16] *Aro*, 377 U.S. at 507.

[17] This, of course, assumes that the costs of protecting the patent are also recovered in a successful infringement suit.

[18] Economists considered rules to be efficient when they simultaneously maximize benefits while minimizing costs.

[19] *Panduit,* 575 F.2d at 1156.

IV. THE SIGNIFICANCE OF SUBSTITUTES

Substitutes are important in determining the damages caused by an infringement, because they determine the amount of lost sales caused by an infringement or the value of being able to exclude others from using the patented technology. If there are products that are freely substituted by consumers for the patented product, then it is unlikely that an infringement would result in significant lost sales. The infringement would merely add one more product to choose from, and the infringer could have added a product, e.g. one of the substitutes, without the patented technology and achieved the same level of sales.

Likewise, with many perfect substitutes it is unlikely that an infringer would have been willing to pay a royalty for the use of the technology that was any greater than those paid for other technology that provided the same functionality. If there were a suitable, non-patented technology, the infringer would switch to it rather than pay royalties.[20] Automobiles are an example of patented products that are freely substituted by consumers. Royalties for most of these patents are low or non-existent. For this reason, an infringement would not likely lead to any lost sales.[21]

At the other extreme is a situation when there are no products the consumer will substitute for the one embodying the patented technology. In that case, if consumers valued the functionality provided by the patented technology, infringement would most likely result in lost sales by the patent owner. Likewise, a license for the technology would have value and would likely involve a royalty. This is the situation that *Panduit* addressed.

Most products fall in between these two extremes. They have substitutes but not necessarily perfect ones. Some, but not all, customers will substitute a product without the patented technology for one with the technology. Thus, an infringement may cause some loss of sales and a license will have some value to a would-be infringer. Lost sales can be determined by careful economic analysis but not without some uncertainty. The CAFC's reluctance to consider the more common situation of imperfect substitution and to embark on this more difficult task led to *Panduit* and the problems it caused.

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[20] This assumes that switching costs are zero. In most situations they are positive and sometimes substantial. If so, they can cause the infringer to negotiate a license or to challenge the patent even though switching is possible. This is often the situation when the infringement is not known until after investments in production facilities and marketing have been made.

[21] This does not mean the patents have no value. It is necessary to have a license from several auto manufacturers before one could lawfully produce a marketable automobile. Owning a portfolio of automobile patents would allow a manufacturer to cross-license for the ones needed. Thus, the portfolio would have value even though none of the licenses involve a royalty payment.

V. PROBLEMS WITH PANDUIT: ABSENCE OF ACCEPTABLE NON-INFRINGING SUBSTITUTES

The second *Panduit* criterion, absence of acceptable non-infringing substitutes, was heavily litigated and was used as a "bright-line" test by many district courts. In those cases, the district courts endeavored to determine whether Product A was sufficiently like Product B so that one can be considered a substitute for the other. If considered substitutes, then lost profit damages were disallowed.[22] If not considered substitutes, then the plaintiff was allowed to claim it would have made all of the infringer's sales. Consequently, the plaintiffs may have been overcompensated.

The problem with the "bright line" approach is that there is no clear place to draw the line. In real markets, product substitution is a matter of degree and occurs across a spectrum. There are some products that consumers will exchange at will. Video recorders, for example, have a number of patented features, some of which provide unique functionality, yet consumers readily interchange many of the models made by various manufacturers.

Other products may only have a few substitutes, but they may be sufficient to provide effective competition to the patented device. Similarly, a product may not be a perfect substitute for the patented device but can be competitive at a lower price or with some other feature added. For example, it is common for older models of products to be sold at a discount alongside new, improved versions. The amount of economic harm suffered by an infringed patent owner in such a market will vary according to how easily customers will shift between the two. It cannot be accurately measured by using a simplistic bright-line test.

There are many reasons why consumers buy a particular product. These reasons generally differ from one consumer to another. For some, the patented feature may be particularly important so that they will not substitute other products. For others, the patented feature may be unimportant and they will quickly substitute another product if the patented one is not available. When the level of interest in a patented feature varies between consumers, a bright line test on substitutability is unworkable.

A product need not be identical to be a suitable substitute. It need only be similar enough that consumers are willing to purchase it in place of another product. If consumers substitute, then the amount of harm suffered by a patent owner from an infringement will be reduced.

Substitution can also occur between products that are different in kind. For example, consumers will substitute attendance at a baseball game, viewing the same game on TV, attending another sporting activity, going to a movie, and staying home with the family. If a neighborhood theater shows the latest digital movie without a license from the owners of the digital patents, it is uncertain whether, absent the infringement, the patrons would

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[22] *See* Kaufman Co., v. Lantech, Inc., 926 F.2d 1136 (Fed. Cir. 1991).

have driven to a licensed theater to see the same movie. Depending upon the ticket price difference, the relative convenience of the other theater, and show times, the patrons might chose a conventional film version of the same movie, another movie or some other form of entertainment. The bright line test of *Panduit* would not even consider the latter type of substitution even though it could be a substantial factor in the market.

In real markets for actual products, substitution is a matter of degree and varies greatly from one product to another. Some products have no substitutes or only a few imperfect substitutes. Most, however, have substitutes that consumers are willing to interchange.[23] Thus, a "bright-line" test as suggested in *Panduit* is unrealistic because there is no clear place to draw a line without denying damages to many harmed patent owners or over-rewarding others.

The court in *Panduit* was well aware of the reality of product substitution when it stated, "There are substitute products for virtually every patented product.…"[24] While this probably overstates the situation, the court points out a fatal flaw with the absence-of-acceptable-substitutes test: few infringed products would have qualified for lost profit damages under *Panduit* had a realistic definition of substitution been adopted.

Panduit is also at odds with economic reality by implying that there can be no lost profits when there are substitutes. A patent may provide significant economic advantage in the marketplace even when there are substitutes. For example, the quick-release button on Craftsman socket wrenches greatly increased sales although there were dozens of competing socket wrenches.[25] When infringement takes away whatever advantage a patent conveys, the patent owner's sales and profits may be significantly reduced. To deny such a patent owner a lost profit remedy because there are economic substitutes would not adequately compensate for the harm already done.

VI. PROBLEMS WITH *PANDUIT*: DEFINITION OF ACCEPTABLE SUBSTITUTES

Having established an unworkable bright-line test on substitutes, the court in *Panduit* and subsequent cases tried to fix the test by imposing an extremely narrow definition of acceptable substitutes. It did this in *Panduit* by first rejecting the evidence presented concerning the behavior of consumers and then by considering only the technical attributes of the product as well as the post-filing behavior of the defendant. As a result, no acceptable substitutes were found. In particular, the court noted that proving absence of non-infringing substitutes involves the same evidence as that

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[23] *See* Mahurkar, 28 U.S.P.Q.2d BNA at 1829: "Competition is not an all-or-none process. There are degrees of substitutability."

[24] *Panduit*, 575 F.2d at 1162 n. 9.

[25] *See* Roberts v. Sears, Roebuck & Co., 723 F.2d 1324 (7th Cir. 1983).

which was introduced in support of the validity of the patent.[26] However, validity turns largely on technical attributes of a product, which may or may not affect the sales of the product or the value of the technology. Pursuing this technical approach further, the court stated: "A product lacking the advantages of that patented can hardly be termed a substitute 'acceptable' to the customer who wants those advantages."[27]

This logic ignores market realities in at least four ways. First, "patented advantages" are important to sales and profitability only to the extent that they provide functionality valued by the consumer or cost savings useful to the producer. Second, there are often many different ways to provide the same functionality or an equally valued functionality, or to achieve an equivalent cost savings. Third, by offering offsetting features or lower prices, products can be competitive even when lacking a particular "advantage." Fourth, the number of people who desire the "advantages" and find the available substitute unacceptable may be a small fraction of those buying the infringing device. If a small fraction is sufficient to make a finding of no acceptable substitutes, then the *Panduit* test will almost always be met and is rendered meaningless.

The failure of this logic is illustrated by many situations where competing products are based on entirely different technologies but are freely substitutable in the customer's mind. For example, high-speed Internet access is valued by a large number of users. This can be provided over copper telephone lines (commonly called DSL) or over coaxial cable (cable TV). Thus, users often substitute one for the other even though the technologies are quite different.[28] An accurate measurement of the harm due to an infringement in one of these technologies would likely require an investigation of the other. *Panduit* and its subsequent cases would have us ignore this reality.

In pursuing this narrow technical approach, the *Panduit* Court specifically rejected evidence on actual consumer behavior. In particular, it dismissed the fact that the infringer "was markedly successful in switching its customers to non-infringing products when that became necessary"[29] because this occurred after the date of first infringement.[30] Unfortunately, the

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[26] *See Panduit*, 575 F.2d at 1162.

[27] *Id.*

[28] This is also a good example of how complex the issue of substitution is. The performance of DSL technology varies inversely with the distance from the telephone company's switching office. Nearby customers can achieve access speeds on par with that of cable customers. However, DSL users a few miles away experience slower speeds and typically are charged a lower rate. At some distances, DSL service does not work at all. Thus, DSL would be a perfect substitute for some users, an imperfect substitute in varying degrees for others, and not a substitute at all for the remainder. There is no way that a bright–line test could be used in measuring economic harm in this market.

[29] *Panduit*, 575 F.2d at 1159.

[30] *See id.* at 1162. Note that this would preclude any evidence of consumer behavior that was not coincident with the date of first infringement. *But see* Mahurkar, 28 U.S.P.Q. 2d (BNA)

court failed to explain why consumer behavior after infringement was not an indicator of how consumers would have behaved earlier.[31]

The *Panduit* court's misunderstanding of substitution and the narrowness of its definition of substitutes is evident in the following comment: "There are substitute products for virtually every patented product; the availability of railroads and box cameras should not of itself diminish royalties payable for infringement of the right to exclude others from making and selling the Wright airplane or the Polaroid camera."[32] Events since *Panduit* have shown that these examples prove just the opposite. Railroads in some highly traveled corridors now compete with airplanes. Likewise, the development of inexpensive 35mm cameras and the advent of one-hour photo developing have severely decreased sales of Polaroid cameras and film.[33] These substitutes would affect the value of a patent on the airplane or on instant photography. It is not a question of whether or not there is an effect, but instead it is a question of the degree of the effect.

In justifying its approach, the *Panduit* court relied on two prior opinions. In *Enterprise Manufacturing*, the court stated: "The appellee, by infringing use, has paid tribute to the utility of the device infringed."[34] In *Seymour v. Ford Motor Co.*,[35] the court stated: "The patent is itself evidence of such utility, and the use of the patented device by the defendant has long been recognized as an admission of this fact.…" This logic has also been applied in other cases analyzing product substitutes.[36]

While infringement suggests utility, it says nothing about the value of that utility. Infringement may occur because an infringer was unaware of the patent, did not believe it was infringing, or did not believe the patent was valid. If so, the value of the patented technology may be very low, very high or somewhere in between.

Unfortunately, placing weight on infringement can lead to the false conclusion that if a patent is infringed then there are no acceptable substitutes. This extreme result occurred in *Radio Steel & Mfg. Co. v. MTD Products, Inc.*[37] The CAFC ruled that non-infringing wheelbarrows were not a substitute for infringing wheelbarrows because the latter were patented. To

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at 1801, where the CAFC in defining substitutes relied on the fact that the infringer referred its customers to the patented product when it discontinued its own manufacturing.

[31] While there are cases where the CAFC has looked at consumer behavior, there are also some where it refused to examine consumer behavior. *See Panduit*, 575 F.2d at 1159; Enterprise Mfg. Co. v. Shakespeare Co., 141 F.2d 916, 920 (6th Cir. 1944); TWM Mfg. Co. v. Dura Corp., 789 F.2d 895, 898 (Fed. Cir. 1986); Gyromat Corp. v. Champion Spark Plug Co., 735 F.2d 549 (Fed. Cir. 1984).

[32] *Panduit*, 575 F.2d at 1162, n. 9.

[33] The latter was argued at length in *Polaroid Corp. v. Eastman Kodak Co.*, 16 U.S.P.Q. 2d (BNA) 1481 (D.C. Mass. 1990), *corrected at* 17 U.S.P.Q. 2d (BNA) 1711 (D.C. Mass. 1991).

[34] *Enterprise Mfg.*, 141 F.2d at 920.

[35] 44 F.2d 306, 308 (6th Cir. 1930).

[36] *See TWM Mfg.*, 789 F.2d at 898 (Fed. Cir. 1986); *Gyromat,* 735 F.2d 552.

[37] 788 F.2d 1554 (Fed. Cir. 1986); 739 F.2d 604 at 616 (Fed. Cir. 1984).

accurately measure injury to a patent holder, the damages analysis must take into account the likely choices of consumers among the various products and suppliers. The sum of these choices determines the impact of an infringement on sales and profits and the value of the patented technology to a producer of the product. This is an economic analysis of consumer behavior and not a purely technical issue.

Cases after *Panduit* frequently demonstrate a continuing lack of understanding of basic economics. In *TWM Mfg.*, the CAFC went so far as to say that the "[m]ere existence of a competing device does not make that device an acceptable substitute."[38] From an economic standpoint, this statement is a contradiction. If products compete, then by definition they are substitutes.[39] If one of a group of competing products had not been available, then consumers would have looked to the other competing products to meet their needs.[40] These other competing products can not be ignored when determining what the sales would have been absent infringement or what a reasonable royalty would have been.

The CAFC has made the hurdle for proving the absence of an acceptable alternative so low that it is almost non-existent. In *Standard Havens*, the court said that the patent holder need "show either that (1) the purchasers in the marketplace generally were willing to buy the patented product for its advantages, or (2) the specific purchasers of the infringing product purchased on that basis."[41] It would seem that the second part of this test would be satisfied for any patent worth litigating.

Having set a low standard for showing a lack of acceptable substitutes, the CAFC compounded its economic error by drawing the false inference that any patent holder meeting the *Panduit* tests has also shown that they would have made the infringer's sales but for the infringement.[42] This might be true if indeed there were no other products to which the consumer would switch.[43] However, that is a much stricter standard than *Panduit* and its subsequent cases.

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[38] *TWM Mfg.*, 789 F.2d at 901 (Fed. Cir. 1986).

[39] In antitrust law, substitution is used to determine the extent of a market and the amount of competition.

[40] This opinion is frequently cited. *See*, *e.g.*, Atlantic Thermoplastics Co. v. Faytex Corp., 28 U.S.P.Q. 2d (BNA) 1343, 1347 (Fed. Cir. 1993).

[41] Standard Havens Products v. Gencor Industries, 953 F.2d 1360, 1373 (Fed. Cir. 1991); *See also* Schneider (Europe) AG v. Scimed Life Systems, Inc., 852 F.Supp. 813 (D. Minn. 1994).

[42] *See* Ryco, Inc. v. Ag-Bag Corp., 857 F.2d 1428, 1427 (Fed. Cir. 1988) "Having established the first three elements of the *Panduit* test, Ag-Bag had already shown a reasonable probability that it would have made the infringing sales made by Ryco." *See also*, *Kaufman.*, 926 F.2d at 1136, "the satisfaction of all four *Panduit* requirements compels us to find that it is reasonable to infer that the patentee probably would have made the sale but for the infringing sale." *Id*. at 1141.

[43] To have made the same level of sales, the patent owner would also need to have charged the same price, used equivalent distribution channels, engaged in a similar type and level of advertising and promotion, etc.

As a result, there have been damage claims asserted that had little, if any, basis in actual economics or business. In *Polaroid,* for example, Polaroid asserted that it would have sold the same amount of instant cameras that Kodak did even though Kodak had followed a low-price, discount store strategy that was anathema to Polaroid's high-end view of its product. In another case, a manufacturer with one salesperson for the entire United States asserted that it would have sold as many machines as an alleged infringer that had a massive sales organization that called on every potential customer monthly.[44] Under *Panduit* and the CAFC's subsequent rulings, many patent holders are indeed better off in court than they would be in the marketplace.

VII. CHANGING THE PANDUIT TEST

The CAFC addressed the limits of *Panduit* in *State Industries,*[45] where it adopted a market share approach. In this case, the infringing product, a method for insulating water heaters, was sold in a very competitive market with many acceptable substitutes produced by many sellers.[46] The CAFC first noted that *Panduit* was "a non-exclusive standard for determining lost profits" and rejected the notion that a patent holder facing substitutes could not recover damages.[47] The court then endorsed a damage methodology whereby the infringer's sales were apportioned among the various competitors according to the market shares before the infringement. Thus, the patent holder was able to recover lost profits on that portion of the infringer's sales it would have had but for the infringement. At the same time, the infringer did not pay damages for sales that the patent holder would not have made.

This approach is more consistent with economic reality and follows the logic of *Aro* by attempting to determine what would have happened absent the infringement. It completely eliminates the need for the unrealistic definition of acceptable substitutes in *Panduit* as the patent holder is allowed to recover on those sales it most likely lost even when there are economic substitutes. It accepts the reality that substitution is a matter of degree and cannot be incorporated with a bright-line test.

The methodology of *State Industries* can also be used when there are no products that consumers are willing to substitute for the patented product, as was held in *Panduit*. In *State Industries*, the pre-infringement share of the

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[44] *See* Weldotron Corp. v. Hobart Corp. and Waldyssa*, S.A.*, Civil Action Nos. 86-2097 and 86-2098, District of New Jersey.

[45] *State Industries,* 883 F.2d at 1578.

[46] The CAFC noted, however, that many of these may have also been infringing. *Id.* at 1578-79.

[47] *Id.* at 1577. *See also*, *Ryco*, 857 F.2d at 1427. ("*Panduit*... which this court has approved as one method of calculating lost profits.") and Bio-Rad Labs. Inc. v. Nicolet Instrument Corp., 739 F.2d 604, 616 (Fed. Cir. 1984), ("Although this court has accepted the *Panduit* standard as a permissible way to establish entitlement to lost profits, we have not made that standard the exclusive one for determining entitlement to lost profits.").

patent holder is simply 100%. Thus, *Panduit* is no longer necessary; it and related subsequent rulings should be abandoned.

While *State Industries* is an improvement over *Panduit*, the court does not go far enough in answering the question of what the patent holder's sales would have been but for the infringement. At best, it is a first approximation of the non-infringement shares. There will be cases where there is reason to believe that market shares were already changing for other reasons or would have changed with the introduction of the new technology by the patent holder rather than the infringer. In these situations, a more complicated analysis is required.

The simplest example of this is when both the patent holder and the infringer introduce the patented technology at or near the same time. If the patented technology enables a new functionality that is valued by consumers, then it is likely that the patent owner would have increased its market share absence the infringement. Thus, using pre-infringement shares to parse out the infringer's sales would understate the lost sales.

For example, suppose that there are five manufacturers of widgets, each of which has a 20% of the market. Company A develops, patents, and introduces a turbocharged widget. Company B quickly introduces its own turbocharged widgets that are later held to be infringing. During the period of infringement, Companies A and B each sold 25% of the widgets, so that together they held 50% of the market.

If nothing else happens in the widget market, the increased market share indicates that some consumers placed a high enough value on the turbocharger that they switched from their existing company to Company A or B.[48] Under *State Industries*, Company B's sales would be reallocated according to pre-infringement market shares.[49] Thus, Company A's lost sales would be 20% of 25%, or 5%.[50] However, a more dynamic analysis might conclude that, absent infringement, Company B's shares would have fallen in line with those of the other non-infringing manufacturers. These three companies shared 50% of the market (16.67% each). If Company B had suffered a similar decline to 16.67%, then Company A's share would have grown to 33.33%[51] instead of the 25% it actually achieved. Thus, it's lost

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[48] The increase in market share may also mean that past purchasers of widgets from Company A & B accelerated their repurchases. For now, we will assume that this was not the situation. In an actual case, the cause of the increase in market shares would need to be investigated.

[49] 883 F.2d at 1579-80.

[50] In doing this calculation, some courts have not provided for any sales by the infringer in the post-infringement period. Thus, they would calculate Company A's lost sales as 8.25% (25% of 25%). This probably was in error as it assumes that the infringer would have exited the market entirely absent the infringement. Regardless, the example above would still hold.

[51] Four companies times 16.67% each equals a 66.67% combined share. Company A gets the rest or 100.00% minus 66.67%, which equals 33.33%.

sales were 8.33% of the market rather than 5% as would be calculated under *State Industries*.[52]

More importantly, *State Industries* assumes that all of the infringer's sales of the infringing product would be shared among the competitors. For example, suppose that in the example above, the market shares of everyone had remained unchanged at 20% each after the infringement. Under *State Industries* the infringer's sales would be divided among the competitors so its 20% would be divided among the others and perhaps itself. Under the latter approach, the patent owner would "prove" lost sales of 4%,[53] implying that the infringer would be left with only 4% of the market.

However, there are many different reasons for shares remaining unchanged, and each has a significant impact on the measurement of economic harm. Consumers may not value the turbocharger feature (at least at the introductory price) so their purchases remain unaffected by it is introduction. If so, one would expect that the infringer's sales and share would be the same even if it had not offered the turbocharger feature. Thus, there was no harm from the infringement. Nonetheless, since many products were sold with the feature, a court would likely find that it met with commercial success. Under *State Industries* the court would award lost profits on the 4% lost sales and a reasonable royalty on the remaining 16%.

Another reason for unchanged market shares might be that the non-infringing competitors responded in ways that offset the value consumers had placed on turbochargers. For example, they may have added other features to their widgets or increased promotion and advertising expenditures, or they may have lowered the price. If so, there is reason to believe that the infringer would have done similar things to defend its market share. Thus, there was no harm from the infringement, yet the court under *State Industries* would award lost profits on the 4% lost sales and a reasonable royalty on the remaining 16%.

Still another reason for the unchanged market shares might be that customers who purchased widgets because of the turbocharger feature were exactly offset by those who purchased the alternative because it did not have the feature. In other words, for every customer gained there was one lost. If so, one would expect the infringer's sales and share would be the same even if it did not offered the turbocharger feature. Thus, there was no harm from the infringement. Nonetheless, since many products were sold with the feature, a court would likely find that it met with commercial success, and under *State Industries,* award lost profits on the 4% lost sales and a reasonable royalty on the remaining 16%.

As these examples point out, the approach in *State Industries* is too simplistic for many real world situations even though it is a significant

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[52] For more on the limits of *State Industries*, *see* "Calculating Economic Damages in Intellectual Property Disputes: The Role of Market Definition," Marion B. Stewart, NERA, WORKING PAPER #27, June 1994.

[53] The 4% is obtained by dividing the 20% infringing share five, i.e.five competitors with equal shares.

improvement over *Panduit*. In many cases, a much more sophisticated and dynamic analysis is necessary in order to measure economic harm.

VIII. USING ECONOMICS: *BIC LEISURE PRODUCTS* AND *MAHURKAR*

Soon after *State Industries*, two cases filled the economic void. They utilize a rigorous analysis of damages and seem to indicate the CAFC's drift toward measuring real economic harm. The first of these, *BIC Leisure Products*,[54] examines the structure of the market, the pricing of the products, the presence of other competitors, and the behavior of consumers to arrive at the conclusion that the infringer's products did not compete with the patent owner's products. Based on this, the CAFC concluded that the patentee suffered no lost sales and therefore no lost profits.[55] The economic analysis of *BIC* is on a par with damages analysis in other areas of the law.

In the second case, *Mahurkar*,[56] Judge Easterbrook relied on his own skills as an economist and the testimony of several other economists to explore the issue of lost profits, reasonable royalties, and price erosion. He correctly establishes the relevant economic theory of patent licensing and then uses market behavior to establish a framework for calculating damages.

The approach used in these two cases is not unique. It is commonly used in many other areas of litigation. In fact, much of it was developed for antitrust matters. A patent owner can and should be required to conduct an economic analysis of damages just as other plaintiffs in other matters do.

IX. *GRAIN PROCESSING*: A REAFFIRMATION OF *ARO*

In the latest[57] significant case on patent damages, *Grain Processing*, the CAFC returned to the basic economics first espoused in *Aro*. This was another case by Judge Easterbrook and it reflects his careful and thorough approach to damages. It also reflects his persistence and the CAFC's difficulty in understanding basic economics since two similar prior decisions by Judge Easterbrook in this matter were reversed by the CAFC.[58] Nonetheless, the appellate decision is full of references to the Plaintiff's need to present a thorough economic analysis and the defendant's ability to rebut with economic arguments of its own.

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[54] BIC Leisure Products. v. Windsurfing Int'l., Inc., 1 F.3d 1214 (1993).

[55] For an earlier case that utilizes a similar "but for" approach and a definition of the relevant markets, see Water Technologies Corporation v CALCO, Ltd., 850 F.2d 660 (Fed. Cir. 1988).

[56] In re Mahurkar Patent Litigation, 28 U.S.P.Q. 2d 1801 (1993).

[57] August 1999.

[58] The significance of this is that the CAFC is likely to make further errors of economics.

In *Grain Processing*, the CAFC firmly reiterated the "but-for" standard when it said, "The 'but-for' inquiry therefore requires a reconstruction of the market as it would have developed absent the infringing product, to determine what the patentee 'would…have made.'"[59]

More significantly, it ruled that not only is the "but-for" condition of the plaintiff to be considered but that of the defendant must also be considered. Specifically, the CAFC said,

> By the same token, a fair and accurate reconstruction of the "but for" market also must take into account, where relevant, alternative actions the infringer foreseeably would have undertaken had he not infringed. Without the infringing product, a rational would-be infringer is likely to offer an acceptable noninfringing alternative, if available, to compete with the patent owner rather than leave the market altogether. The competitor in the "but for" marketplace is hardly likely to surrender its complete market share when faced with a patent, if it can compete in some other lawful manner. Moreover, only by comparing the patented invention to its next-best available alternative(s) – regardless of whether the alternative(s) were actually produced and sold during the infringement – can the court discern the market value of the patent owner's exclusive right, and therefore his expected profit or reward, had the infringer's activities not prevented him from taking full economic advantage of this right.[60]

By requiring that the defendant's "next-best available alternative(s)" be considered, the CAFC made a major commitment to proper economic analysis. Heretofore, the patent owner's damages expert was allowed to assume that the infringer had no choice but to either exit the market or pay a very high royalty. In the real world, there often are many alternatives to these unattractive choices.

While Grain Processing dealt with acceptable alternatives, i.e. perfect substitutes, partial substitutes should also be considered. Even though these alternatives aren't perfect, they may allow the defendant to retain many of its sales. Rather than exit the market, the infringer may be able to adopt a slightly inferior technology and remain competitive. If so, the harm to the patent owner as a result of the infringement would be less.

The infringer's alternatives also go beyond the product or the process itself. For example, the infringer may be in a position to commit more marketing resources, cut price or take other steps to offset the lack of the patented technology. By his production of the infringing product, the infringer has shown his intention to be in the marketplace with a competitive product. The CAFC in Grain Processing is correct in saying that the competitor is hardly likely to surrender its complete market share when faced with a patent.

This "next-best alternative" concept is especially critical to a reasonable royalty analysis as it limits the amount an infringer would pay in royalties. In Grain Processing, Judge Easterbrook "capped" royalties at 3% since the next best alternative, using a non-infringing alternative, raised

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[59] Grain Processing at **23.

[60] Grain Processing, at **25.

production costs by a similar amount. In contrast, the plaintiff had argued for a 28% royalty rate.

The next-best-alternative is also important when the patent owner argues that the infringer would be willing to pay all or part of the profits above a normal return as a royalty. For example, a patent owner might argue that if the infringer expected to earn a 25% return by making the infringing product as compared to his normal return of 12%, then the infringer would be willing to pay the additional 13% as a reasonable royalty. The flaw in this approach is immediately evident when the infringer's next best alternatives are considered. For one, the alternative may cap the rate as it did it *Grain Processing*. For another, the alternative may be to invest in an entirely different product with an expected return of 24%. In that case, the infringer would be unwilling to pay more than 1%.[61]

By requiring an examination of the infringer's alternatives, the CAFC implies that the defendant's willingness to pay should be considered. This is in contrast to earlier rulings like *Rite-Hite* where the CAFC said, "what an infringer would prefer to pay is not the test for damages."[62] Thus, *Grain Processing* brings a balance back to patent damages. In doing so, the CAFC has greatly reduced the possibility that a patent owner will be better off in court than it would have been in the marketplace. At the same time, as it noted in its opinion, the CAFC has not increased the chances that a patent owner will be under-compensated.

On the issue of substitutes, the CAFC in *Grain Processing* properly noted that a product does not need to be on sale to have significance as a substitute. The presence of raw land will constrain the prices of approved building lots even though the former may not be currently for sale. According to the CAFC in *Grain Processing*, the precise effect is a matter of fact and analysis that the infringer is entitled to present.

In deciding whether the alternative was indeed a substitute, the *Grain Processing* court made it clear that the consumer, i.e. the market, was to be the ultimate determining factor. Throughout the opinion, the CAFC refers to the fact that consumers considered the non-infringing alternative an acceptable substitute. It specifically limited *Panduit's* narrow definition of substitutes as unique to the situation where the alternative wasn't on sale and no evidence of its potential availability was presented. It went on to reject as precedent the prior opinion that "[I]t's is axiomatic … that if a device is not

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[61] Companies are generally faced with a surplus of investment alternatives. They chose among them based on risk and return considerations and the options they may present for future investment. Since capital and management expertise tends to be fixed in the short term, investing in one project tends to foreclose investment in another (or investing in one now forecloses the ability to invest in one in the future). Economists view the foregone investment as a cost of investing in the other and call this an opportunity cost. Businessmen recognize this by rejecting new investments whose projected returns fall below a rate, the hurdle rate, that is greater than the firm's average rate of return. See Mark A. Glick, The Law and Economics of Patent Infringement Damages, 10 UTAH BAR JOURNAL 15 (1997).

[62] *Rite-Hite* at **48 referencing *TWM*, 789 F.2d at 900, 229 U.S.P.Q. (BNA) at 528.

available for purchase, a defendant cannot argue that the device is an acceptable non-infringing alternative…".[63]

In summarizing, the CAFC said it "requires reliable economic proof of the market that establishes an accurate context to project the likely results 'but for' the infringement." This clearly is an endorsement of damage analyses that are based on sound economic principles and rooted in the realities of the marketplace.

X. ANOTHER PROBLEM WITH *PANDUIT*: INFRINGER'S REASONABLE ROYALTY

Panduit in overturning the lower court's finding for a reasonable royalty of 2 1/2% also states that: "The setting of a reasonable royalty after infringement cannot be treated, as was here, as the equivalent of ordinary royalty negotiations among truly 'willing' patent owners and licensees."[64] It later discusses the "hypothetical negotiation" under which reasonable royalties are determined: "Determination of a `reasonable royalty' after infringement, like many devices in the law, rests on a legal fiction."[65]

The Sixth Circuit then suggests that royalty rates for infringers should be higher than those observed in practice.[66] To do otherwise, the Sixth Circuit argues, would "...make an election to infringe a handy means for a competitor to impose a 'compulsory license' upon every patent owner." The Sixth Circuit goes on to note that given the difficulty in prosecuting a patent infringement case "the infringer would have everything to gain and nothing to lose if he could count on paying only the normal, routine royalty non-infringers might have paid." There are several flaws in this conclusion.

First, the problem addressed by the *Panduit* court, the apparent incentive to infringe, is explicitly addressed by the provision for punitive damages in the case of willful infringement. A willful infringer already runs the risk of paying as much as three times a reasonable royalty. By adjusting the reasonable royalty upward for an "infringer's royalty" the Sixth Circuit is doubling up the punitive damages. Since infringement often involves legitimate differences of opinion with respect to validity, scope and infringement, intentionally inflating compensatory damages as a punitive measure is especially onerous.

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[63] *Zygo*, 79 F.3d at 1571

[64] *Panduit*, 575 F.2d at 1158.

[65] *Id.* at 1159.

[66] *Id.* at 1163. In so doing the CAFC was critical of the defendant's expert witness for ignoring the case law that established the so-called infringer's profit. This is contrary to the earlier ruling in *Aro* (citing *Coupe v. Royer*) which held that patent damages should be calculated without regard to whether the defendant gained or lost by his unlawful acts. The criticism is also unfair in that the expert testified to the royalty rate one would expect under the hypothetical negotiation established by the CAFC. His testimony as to what a willing licensor and a willing licensee would have agreed to was precisely what the hypothetical calls for.

Secondly, the *Panduit* court is wrong in believing that an award of a reasonable royalty is the equivalent of a license because the infringer is generally enjoined from future use.[67] Oftentimes the injunction has serious consequences for the infringer that go far beyond any possible damages award. By the time of the injunction the infringer may have invested heavily in additional development, new facilities and product introduction and be unable to recoup these costs. The potential success of the product will be better understood and may be greater than originally expected. This likely will lead to the award of a higher reasonable royalty than what would have been negotiated earlier. Finally, there may be serious injury to the infringer's reputation if the infringing product is withdrawn. In fact, an injunction can easily place a patent owner in a better negotiating position after infringement than before.

For example, Kodak faced the possibility of a severe injury to its reputation when it was held that Kodak had infringed some of Polaroid's patents on instant photography. At that point, Kodak was unable to provide film to the millions of customers who owned a Kodak instant camera. Fearing long-term damage to its reputation, Kodak immediately offered these customers a choice of a share of Kodak stock, a conventional Kodak camera kit or merchandise certificates for Kodak products. Had Polaroid been willing to negotiate a license with Kodak at that time, it is entirely plausible that Polaroid could have extracted a going-forward royalty rate that would have restored its lost profits as well as earning it a good future return. Thus, the possibility of a future injunction alone can create a significant incentive for a would-be infringer to negotiate rather than infringe and offers the patent owner an alternative method for recovering its losses when infringement occurs.

The third problem with the *Panduit* Court's infringer's royalty argument is that the hypothetical negotiation already has a built-in bias toward a royalty rate that is higher than those observed in practice. This is because the rate is supposed to reflect the assumption that both parties agree the patent is valid and infringed. Since these important issues are uncertain in most actual negotiations, the appropriate rate from the hypothetical negotiations would tend to be higher than observed rates.[68] Thus, an infringer already risks paying a higher rate than that which it could have obtained in a

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[67] As noted by the dissent in *Rite-Hite* at **114

[68] This does not mean that observed rates should not be used in establishing a reasonable royalty. To the contrary, they offer hard evidence of the value of the technology under certain conditions. In some cases, observed rates are negotiated with both parties agreeing to validity and infringement and the rates are directly relevant to the hypothetical negotiation. In the other cases, observed rates provide a useful benchmark for the analysis. For further discussion, see *Beyond Georgia-Pacific: A New Approach to the Calculation of Reasonable Royalties*, Jennifer Fearing, Atanu Sahaand and Roy Weinstein; Micronomics, Inc., Los Angeles, CA.

negotiation prior to trial. *Panduit* and many subsequent cases go well beyond this by calling for a separate, higher infringer's royalty.[69]

The separate infringer's royalty has led to over-compensation of patent owners and created a situation where a patent owner is far better off in court than he or she would be in the marketplace. This creates an incentive for the patent owner to encourage litigation by insisting on unreasonable terms for licensing, by being overly broad or vague as to the patent claims or by refusing to negotiate expeditiously. A potential licensee faced with such a situation can either proceed to make the product and risk infringement or abandon the technology and its related investment. The former leads to excessive litigation while the later leads to reduced innovation. Both lead to the withholding of innovation from consumers. Thus, the Sixth Circuit and later the CAFC by focusing exclusively on the patent owner has subverted the purpose of the patent laws.

The unique uncertainty surrounding patent protection makes this potential over-compensation a particularly serious problem. Patents are hard to interpret and their scope is often unknown. Would-be producers must use their judgement when to license or not. If the penalties for misjudging are great, they will err on the side of caution. They will do less innovation that is close to other patented innovation. They will accept licensing restrictions that lessen competition or retard innovation. They will pay royalties that may not be necessary. All of these impose a cost on society that may be greater than that necessary to stimulate innovation. The optimal damages award, then, is that which makes the patent owner whole but no more than that.

Fortunately, the patent laws explicitly balance the need to encourage innovation with the need to avoid excessive litigation. Compensatory damages, if properly applied, will make the patentee whole and maintain the incentive to innovate. Punitive damages that are applied in the case of willful infringement provide for deterrence by making compulsory licensing unprofitable. Adding a hidden penalty into the compensatory damages only confuses the situation and leads to over-recovery by patent owners.[70]

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[69] It is not uncommon for the CAFC to sustain an award based on a royalty several times that observed in the real world. Differences in uncertainty with respect to validity and infringement are unlikely to explain that much difference.

[70] Actually, in some situations, compulsory licensing may be in the public interest. For example, a patent owner may lack the ability to fully exploit his or her invention and yet still refuse to license the innovation (or may demand excessive licensing terms). As a result, the invention would be slow in getting to consumers and may never be widely distributed. By infringing the patent, a stronger competitor would assure more benefits to more consumers sooner. As long as the infringer was required to pay lost profit damages or a reasonable royalty, the patent owner would retain his or her incentive to innovate. Under these circumstances, the patent owner would be fully compensated for the loss and the maximum number of consumers would benefit from the innovation. Thus the CAFC's single-minded concern over compulsory licensing may be misguided. In fact, the threat of a compulsory license would assure that a patent owner quickly applies its technology in a matter that yields the maximum benefit to consumers. Note, however, that the CAFC in *Rite-Hite* (at **22 – 31) explores the social policies behind the patent system and rejects the notion that its primary objective is the marketing of inventions.

XI. PROBLEMS WITH *STATE INDUSTRIES*: DUAL AWARDS

While the CAFC in *State Industries* greatly improved its economic analysis by adopting a market share approach, it made a new and serious error by simultaneously awarding lost profits on the patent owner's lost sales and a reasonable royalty on the remaining sales.[71] This could never have occurred in the real world and is another example of the plaintiff being far better off in court.

In upholding dual damages, the CAFC relied on an earlier case, *TWM Mfg. Co. v. Dura Corp.*[72] The circumstances in *TWM*, however, were quite different than those in *State Industries*. In *TWM*, reasonable royalties were awarded only in those years in which the patentee could not prove lost profits. Furthermore, this was by prior agreement of the parties.[73] In *State Industries*, the award of reasonable royalties and lost profits is for the same products, sold in the same market, in the same year. This could never have occurred in the real world.

By doing this, the CAFC gives the patent owner a much larger return than it would have received absent any infringement. In the real world, the patent owner typically chooses between selling the product exclusively or licensing. It is very difficult to sell the product exclusively to some customers and simultaneously license it for sale to others.[74] In *State Industries* it was impossible for the patent owner to do this. There is no "but-for" world in which the plaintiff, *State Industries*, could have simultaneously made some of the infringer's sales (lost profits) and collected a royalty on the rest (reasonable royalty).[75]

A dual recovery like this creates a windfall for the patent owner making him or her far better off in court than in the marketplace. In *State Industries*, the plaintiff received far more from the Court than it would have from the marketplace. That did not occur in *TWM* as the patent owner recovered under only one theory for any given period of time.

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[71] State Industries, Inc. v. Mor-Flo Industries, Inc., 883 F.2d 1573, 1577-80 (Fed. Cir. 1989), *cert. denied*, 493 U.S. 1022 (1990).

[72] *TWM Mfg. Co.*, 789 F.2d 895 at 898 (Fed. Cir. 1986).

[73] *Id.* at 902.

[74] There may be real-world situations where a patent owner may reasonably be expected to sell exclusively to some customers and license sales to others. One example would be when markets are geographically separated. Another would be where the end users can be segregated perhaps by distribution channel and supplied separately.

[75] This lack of reality is acute when the hypothetical negotiation is used to determine a reasonable royalty for the sales made by the infringer that would not have been made by the patent owner. For example, what is the appropriate context or time in which to place these negotiations? Likewise, if the patent owner has recovered all of its lost profits, wouldn't it be willing to license for anything greater than $1.00?

Predating *TWM* is another case, *Gyromat Corp. v. Champion Spark Plug Co.*,[76] which also awards both lost profits and reasonable royalties but it too is economically distinguishable from *State Industries*. It awards lost profits on one product for which the District Court found no substitutes and awards a reasonable royalty on another product for which it found substitutes. Since this situation could have occurred in the "but-for" world, it does not necessarily make the patent owner better off in court than in the marketplace as *State Industries* does.[77]

There are several other cases often cited as supporting a dual award.[78] The validity of such awards does not seem to have been challenged in these cases. These cases merely uphold the awards for other reasons and the opinions do not discuss the issue of dual awards. Thus, there are no prior cases that specifically support the awarding of lost profits and reasonable royalties for the same product, at the same time, in the same market.[79]

Such awards are economically insupportable unless a dual structure could have actually existed. As already mentioned, such claims make the patent owner far better off in court than in the marketplace. Thus, these dual awards encourage excessive litigation, reduced innovation and the withholding of innovation. This is contrary to the goals of the patent system.

XII. *RITE-HITE* AND *KING INSTRUMENTS*: INCONSISTENT APPLICATION AND AVOIDANCE OF ECONOMIC EVIDENCE

One problem with the "but-for" economic approach of *Aro* and *Grain Processing* is that it may be difficult to determine where damages end. Like the war being lost for want of a horseshoe nail, the consequences of an infringed patent may reach far beyond the lost sales of a single product. In other areas of the law, the courts have generally settled the question of how far down the causal chain the plaintiff is allowed to go.[80] In patent damages, however, the CAFC has struggled unsuccessfully with this question. The two latest cases on this topic, *Rite-Hite* and *King Instruments*, strongly endorse a

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[76] *Gyromat*, 735 F.2d at 549 (1984).

[77] *Gyromat* was decided under a *Panduit* theory. A more sophisticated approach would have allowed a lost profits claim on both products and likely resulted in a larger damages award.

[78] See *Rite-Hite v. Kelley*, 56 F.3d 1538; 1995 U.S. App; 774 F.Supp.1514; 1991 U.S.Dist.; *Amstar Corp. v. Envirotech Corp.*, 823 F.2d 1538 (Fed. Cir. 1987); *Radio Steel & Mfg. Co. v. MTD Products, Inc.*, 788 F.2d 1554 (Fed. Cir. 1986); 739 F.2d 604 at 616 (Fed. Cir. 1984); and *Schneider (Europe) AG and Schneider (USA) Inc. v. Scimed Life Systems*, 852 F.Supp. 813 (D. Minn. 1994).

[79] In fact, *Aro (*at 512) prohibited any recovery beyond "…damages sufficient to put [the patent owner] in the position he would have occupied had there been no infringement…"

[80] Usually, the limits have been set in terms of "proximate cause" or "foreseeability". See Consolidated Rail Corp v. Gottshall, 129 L. Ed. 2d 427, 114 S. Ct. 2396, 2406 (1994). Courts have also limited the scope of damages based on the speculative nature of some of the more distant impacts.

rigorous economic approach to damages but are so internally inconsistent that they leave the issue unresolved.

In patent damages, the causal chain issue arises in both the lost profits and the reasonable royalty analyses. In lost profits, it arises when trying to determine which products should be included when calculating the lost sales. In the reasonable royalty analysis, the issue arises when the court decides the base to which the royalty rate is to be applied.[81]

More specifically, the issue arises in a lost profits analysis when the patented product is usually sold with an unpatented product, e.g. buns with a hamburger. Likewise, it can arise when there are other goods that are sold independently of the patented item but can be expected to be sold with the patented product, e.g. french fries with a hamburger. The former is sometimes referred to as a convoyed good and the later as a collateral sale.

As the example illustrates, the distinction between being a convoyed good or collateral good is not clear. In fact, courts have often used these and other terms such as "diverted sales" interchangeably. Economically, the distinction is not meaningful. Instead, the issue is the degree to which the sales of the non-patented product are related to the patented product. If this relationship can be reliably quantified, then the causal link is strong.

In a series of decisions promulgating the "entire market rule", the CAFC has again espoused a "bright line" economic test for including products and then ignored it in favor of a technical analysis. For the better part of this century, the various Appellate Courts and later the CAFC held that the value of all of the components should be included if the plaintiff could "show that the entire value of the whole machine, as a marketable article, was 'properly and legally attributable' to the patented feature."[82] Subsequent cases allowed full recovery if the patented product "was of such paramount importance that it substantially created the value of the component parts."[83] The current CAFC has stated that full recovery is permitted "when the patented feature is the 'basis for customer demand'."[84]

Each of these establishes an economic test, i.e. they examine the relationship of the patent to the market demand for the product. Unfortunately, they are offered as yet another simple "bright line" test for

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[81] In a properly conducted reasonable royalty analysis, the rate and the base (i.e., the dollar amount to which the rate is applied) are interrelated and should be determined simultaneously. When observed rates involve a narrowly defined base, they should not be used as the basis for a reasonable royalty rate that is to be applied to a more broadly defined base (and vice versa). In practice, this is often violated.

[82] *Rite-Hite* at **28 (*quoting* Garretson v. Clark, 111 U.S. 120, 121, 28 L. Ed. 371, 4 S. Ct. 291 (1884)); Westinghouse Elec. & Mfg. Co, v. Wagner Elec. & Mfr. Co., 225 U.S. 604, 614, 56 L. Ed. 1222, 32 S. Ct. 691 (1912).

[83] *Rite-Hite* at **28 (*quoting* Marconi Wireless Telegraph co. v. United States, 99 Ct. Cl. 1, 53 U.S.P.Q. (BNA) 246, 250 (Ct. Cl. 1942), *aff'd in part and vacated in part*, 320 U.S. 1 (1943)).

[84] *Rite-Hite* **28 (*quoting State Indus.*, 883 F.2D at 1580, 12 U.S.P.Q.2d (BNA) at 1031; TWM Mfg. Co. v. Dura Corp., 789 F.2d 895, 900-01, 229 U.S.P.Q. (BNA) 525, 528 (Fed. Cir.), *cert. denied*, 479 U.S. 852, 93 L. Ed. 2d 117, 107 S. Ct. 183 (1986)).

something that is a matter of degree. The contribution of a patented item to the value of a whole product is not amendable to a "true or false" type of test. The real world is much more complex than that. With these tests, a plaintiff whose patent contributed significantly but not substantially to the value of the infringing product is left out in the cold. In trying to correct this injustice, a sympathetic court may be tempted to interpret "significant" the same as "substantial" thereby exposing the defendant to an unreasonably high award.

Interestingly, while the CAFC established a market-based test, it most often relies upon the technical attributes of the product when implementing the test. It has examined whether "the unpatented and patented components are physically part of the same machine"[85] and whether "the patented and unpatented components together were considered to be components of a single assembly or parts of a complete machine, or they together constituted a functional unit."[86] In one of the latest cases on this topic, *Rite-Hite,* the CAFC specifically denied that "financial and marketing dependence" were the guiding principles and reiterated the technical tests above.[87]

In *Rite-Hite* the Court was faced with a patent owner whose principal injury was to a product (a device for securing truck trailers to loading docks) that did not practice the patent at issue but which competed with the infringing product. Thus, the question was whether or not damages should be extended to the unpatented product. For its answer, the CAFC went back to the basic concepts of *Aro* and noted that it "surely states a 'but-for' test."[88] It then reasoned that the Plaintiff would have made the sales of the non-practicing product "but-for" the infringement. Thus, it concluded that damages on these products were allowed and upheld the District Court's opinion.

It then turned to the question of products normally sold with the dock restraints but not integral to them, i.e. collateral sales. It noted unchallenged evidence that there were a number of loading dock products commonly and sometimes even contractually[89] sold with the restraints. The CAFC then abandoned its "but-for" approach and ruled that damages resulting from the lost sales of these products were not recoverable because the products did not function with the patented invention and vacated the lower court's ruling. Nowhere did the CAFC indicate why this technical definition was relevant or try to explain why the but-for analysis did not apply. The CAFC merely

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[85] *Rite-Hite* at **29 (*quoting* Western Elec. Co. v. Stewart-Warner Corp., 631 F.2d 333, 208 U.S.P.Q. (BNA) 183 (4th Cir. 1980), *cert. denied*, 450 U.S. 971, 67 L. Ed. 2d 622, 101 S. Ct. 1492 (1981)).

[86] *Rite-Hite* **29 (*referring to* Velo-Bind, Inc. v. Minnesota Mining & Mfg. Co., 647 F.2d 965, 211 U.S.P.Q. (BNA) 926 (9th Cir.), *cert. denied*, 454 U.S. 1093, 70 L. Ed. 2d 631, 102 S. Ct. 658 (1981)).

[87] *Rite-Hite,* at **30.

[88] *Rite-Hite*, at **12 & 13.

[89] Many of the customers required combined bids on the products.

stated that such damages "would constitute more than what is 'adequate to compensate for the infringement'."[90]

However, this same statement about adequacy is the basis for the *Aro* "but-for" approach, which would argue for inclusion of both the unpatented product and the products sold with it.[91] The lost sales of these products are economically indistinguishable from the lost sales of the non-practicing restraints. Neither would have been lost absent the infringement.[92] The dissent was correct in calling this a "half a loaf" decision.[93]

Only a few months later, *King Instruments* extended the award of damages on non-infringing products by allowing the patent owner lost profits on a product that did not compete with the infringing product (unlike the situation in *Rite-Hite* where the products competed). In *King Instruments*, the two parties made competing machines called re-winders that loaded magnetic tape onto cartridges. The patented product was an accessory to the infringer's machine. The Plaintiff was award damages on lost sales of its machines even though it did not offer anything comparable to the patented accessory. After an extensive discussion of the history and policies behind the patent laws,[94] the CAFC reaffirmed the "but-for" standard of *Aro* and concluded that the lower court was correct in awarding lost profits on the non-practicing machines themselves.

However, unlike *Rite-Hite*, the CAFC in *King Instruments* sustained an award of damages on the spare parts normally sold along with the non-practicing machine, i.e. collateral sales. There is no explanation in the opinion as to why the CAFC thought these collateral sales were different from those in *Rite-Hite*. It appears that the CAFC was impressed by the fact that the patented product functioned together with the unpatented one and that the spare parts were integral to both. Economically, this is insignificant since in each case these were sales that could reasonably be expected to be lost if a machine wasn't sold.

The dissent in *King Instruments* raised a serious objection about the lack of evidence on consumer preferences. Specifically, there was no determination by the District Court that the patented invention was the basis for the demand for even the accessory let alone the re-winder. In fact, the patent owner did not even attempt to prove that the infringing accessory

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[90] *Rite-Hite at* ** 32.

[91] For more on this argument, *see* the District Court opinion at **87 to 91. *Rite-Hite Co. v. Kelley Co.*, 774 F. Supp. 1514; Lexis 14435; 21 U.S.P.Q.2D (BNA) 1801; 34 Fed. R. Evid. Serv. (Callaghan) 710.

[92] This was not a question of proof of causation. The CAFC noted that the plaintiff used the same detailed records for lost sales of other equipment as it did for the lost sales of the non-practicing dock restraints.

[93] *Rite-Hite* at **130. There may be reasons unrelated to economics for drawing the line where the CAFC did. For example, the CAFC may feel that the computation of damages on collateral sales is inherently more speculative and, therefore, shouldn't be allowed. However, the CAFC offered no such explanation.

[94] *King Instruments* at **14 – 29. This discussion is well worth reading as is the dissent's beginning on **38.

caused it to lose any sales of its re-winder. To the contrary, there was evidence that the infringer's re-winder had a number of superior features without the infringing accessory. Thus, the District Court had no economic basis for believing that any sales were lost as a result of the infringement

In addition, the District Court found that there were numerous non-infringing alternatives easily available to the infringer. Thus, the value of the patented technology would appear to be small or zero. Nonetheless, the CAFC upheld a substantial award. This unwillingness to focus on the economic evidence (or lack thereof) is reminiscent of *Panduit* and is not consistent with the CAFC's trend toward careful economic reasoning. In both of these cases the CAFC makes a strong argument in favor of a rigorous approach to patent damages but then avoids it in makings its decision.

XIII. PROBLEMS WITH *RITE-HITE*: DUAL AWARDS

Like *State Industries*, *Rite-Hite* also supports the simultaneous award of both lost profits and a reasonable royalty. It cites the cases discussed above and, for the first time, explicitly concludes that dual awards are appropriate.[95] However, there is no explanation for this opinion other than citing the prior cases. As discussed above, these cases do not support simultaneous awards. Thus, it is not clear that this issue was argued at all. In *Rite-Hite*, as in several of the previous cases, these simultaneous awards result in a serious overcompensation of the patent owner.

The dissent in *Rite-Hite* correctly points out that *Aro* holds that once the plaintiff is made whole, further damages are inappropriate. In other words, once Rite-Hite recovers its lost profits, it is returned to the position it would have been in absent the infringement. Awarding additional damages based on royalties over-compensates the patent owner.[96]

Rite-Hite is a particularly good example of the dual recovery error. The reasonable royalty was based upon one-half of the profits Rite Hite forewent as a result of the infringement. These were calculated as if the lost profits award had not occurred. Thus, Rite Hite was awarded one-and-a-half times the profits it claimed it lost.

Besides being excessive, it makes no economic sense whatsoever to base a royalty rate on lost profits that have been restored. In a hypothetical negotiation, the patent owner, having already received his lost profits, would view a royalty as a windfall and would normally accept a licensing offer. The infringer, as the hypothetical licensee, would be unlikely to agree to any payment since it would be severely limited in the sales it was allowed to make.

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[95] *Rite-Hite* at **13.

[96] It appears that the lower courts have arrived at a dual award by viewing each unit sold as a separate case of infringement eligible for damages. If so, this is a good example of legal myopia triumphing over common sense.

The dissent in *Rite-Hite* and again in *King Instruments* discusses the need for a balanced approach to patent damages. In *Rite-Hite*, the dissent chastises the majority for its concern over a compulsory license. It correctly argues that the award of damages is not the same as a license and that the infringer is enjoined from further sales.[97] It also notes that the defendant was an "innocent" infringer as it had begun producing the device two years before the patent issued. The defendant did not make any attempt to hide the infringement and merely sought its day in court. There is no way in this case that the over-stated compensatory award could have deterred infringement or served some other social purpose.

In *King Instruments*, the dissent developed this theme of the "innocent" infringer further and noted that "A patent now hangs like a sword of Damocles over competition with unpatented goods and serves as a powerful means for extortion."[98] This would not be the case if the CAFC required damages analyses to be based on economic analyses that reflected the complications of the marketplace.

XIV. PROBLEMS WITH *RITE-HITE*: THE HYPOTHETICAL NEGOTIATION

In support of its excessive royalty, the majority in *Rite-Hite* revisited the hypothetical negotiation. It noted that the hypothetical negotiations are between a willing licensor and a willing licensee. It then said, "this is an inaccurate, and even absurd, characterization when, as here, the patentee does not wish to grant a license."[99] Thus, because the patentee was unwilling to grant a license, the CAFC felt a high rate was justified. Unfortunately, most patent litigation arises because the patent owner is unwilling to license.[100] High reasonable royalty rates serve to convince more patent owners to litigate rather than negotiate.

Furthermore, abandoning the willing licensor assumption renders the hypothetical construct worthless as a tool for analysis and lets a court choose virtually any rate it wants. This is a very dangerous proposition. Hopefully, the CAFC intended to restrict its comments to this single case.

XV. SUMMARY

Much of the past law for patent damages has been at odds with economic reality. Repeatedly, the CAFC has tried to establish "bright line"

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[97] *Rite-Hite* at **114.

[98] *King Instruments* at **55.

[99] *Id*.

[100] In a sense all patent litigation is between unwilling parties since no licensing agreement was reached. Willingness depends upon the rate being offered. At some rate, even Rite-Hite would have been willing to license.

tests for economic conditions such as substitutability that cannot be reduced to such simple inquiries. The CAFC has also frequently confused technical attributes of products with economic attributes. To make the law work, the CAFC adopted an excessively narrow definition of acceptable alternatives.

In more recent cases, the bright line tests and the definitions found in *Panduit* have been replaced with more reality-based economic approaches like those used in *State Industries*, *BIC Leisure Products*, *Mahurkar* and *Grain Processing*. Even in cases like *Rite-Hite* and *King Instruments* where the application of economics is flawed the CAFC has espoused a rigorous economic approach to damages.

Panduit's assertion of an infringer's royalty and *State Industries'* and *Rite-Hite's* award of both lost profits and a reasonable royalty lead to excessive awards that are contrary to the purposes of patent law. By making the patent owner better off in court than in the marketplace, infringer's royalties and dual awards encourage excessive litigation and retard innovation. These approaches to damages should be rejected.

Likewise, the conflicting approaches to limitations on damages taken in *Rite-Hite* and *King Instruments* need to be reconciled. The "functionally part-of" tests in those cases has little relevance to economic damages. A return to market-based tests would improve these decisions.